

# FOODS AND COOKERY

MATTESON AND NEWLANDS



Class TX663

Book 113

Copyright N<sup>o</sup> \_\_\_\_\_

**COPYRIGHT DEPOSIT.**







A LABORATORY MANUAL OF  
FOODS AND COOKERY



THE MACMILLAN COMPANY  
NEW YORK • BOSTON • CHICAGO • DALLAS  
ATLANTA • SAN FRANCISCO

MACMILLAN & CO., LIMITED  
LONDON • BOMBAY • CALCUTTA  
MELBOURNE

THE MACMILLAN CO. OF CANADA, LTD.  
TORONTO

# A LABORATORY MANUAL OF FOODS AND COOKERY

BY

EMMA B. MATTESON

INSTRUCTOR IN HOME ECONOMICS, GEORGE PEABODY  
COLLEGE FOR TEACHERS

AND

ETHEL M. NEWLANDS

DIRECTOR OF HOME ECONOMICS, THE BUFFALO  
TECHNICAL HIGH SCHOOL



New York

THE MACMILLAN COMPANY

1916

*All rights reserved*

TX663  
M3

COPYRIGHT, 1916,  
BY THE MACMILLAN COMPANY.

---

Set up and electrotyped. Published June, 1916.

6150

JUN 29 1916

Norwood Press  
J. S. Cushing Co. — Berwick & Smith Co.  
Norwood, Mass., U.S.A.

©Cl. A 431699

No. 1.

## PREFACE

TEACHING experience has shown the need of a textbook approaching the study of foods and cookery through experimental work in chemistry, bacteriology, and biology. In this book, therefore, under each topic a considerable number of experiments will be found. The performance of these experiments and the answering of the questions which arise from them will give the student a firsthand acquaintance with the leading characteristics of each kind of food, will furnish a basis for the discussion of the procedures used in cookery, and should give her such a grasp of the principles involved as will enable her to work without recipes, or to develop her own. The attainment of such mastery on the part of the student is, however, greatly facilitated by practice with a considerable number of recipes which have already been thoroughly tested, just as in other experimental sciences, the student is taught in part through practice with explicit and workable laboratory directions. Hence, in addition to the experiments, the present work will be found to contain thoroughly tested recipes in adequate number and variety to permit of choice. It has also seemed wise to include a considerable number of "score cards" to facilitate judgment of the finished product; and of illustrative calculations of nutritive values of typical cooked foods. Each chapter has been made sufficiently complete in itself so that the topics may be taken up in any desired sequence and not necessarily in the order followed in the book.

This Laboratory Manual was worked out through the correlated experience of the authors at Pratt Institute, Brooklyn, and Simmons College, Boston, and is amplified by their individual

experiences in the Public Schools of New York City and New Haven; the State Normal School at Winona, Minnesota; The School of Education of The University of Chicago; and The Diet School of Johns Hopkins Hospital.

The authors desire to acknowledge the help given by Professor Ada Field of George Peabody College for Teachers, in the revision of the manuscript, and to express their appreciation of the encouragement received from Dr. Henry Clapp Sherman, of Columbia University.

# CONTENTS

## CHAPTER I

### Beverages

	PAGE
Food value of beverages. The methods of serving beverages.	
Fruit acids. The stimulants of beverages. Experiments with tea, coffee, chocolate, and cocoa. Recipes for preparation of stimulating and nutritive beverages. Recipes for cereal waters. References .	1

## CHAPTER II

### Fruits

Classification. Composition and nutritive value. General rules for preparation. Reasons for cooking fruit. How to purchase fruit. Experiments with fruits. Recipes for preparation of fresh and dried fruits. Food value of apple sauce and stewed prunes. References .	11
---	----

## CHAPTER III

### Canning and Preserving

Methods of preservation of fruits and vegetables. Experiments with fruits and vegetables. General rules for canning and preserving. General directions for canning and preserving. Recipes. Score card for canned fruits, preserves. References . . .	22
---	----

## CHAPTER IV

### Cereals

Composition and nutritive value. How to purchase cereals. Reasons for cooking cereals. Methods of cooking. Methods of serving, variations in serving, differences in consistency. Table of time and amounts of water per unit of cereal. General rules for cooking of cereals. Experiments. Recipes for cereals, cereals with fruits, farinaceous desserts, gruels. References . . .	47
--	----



## CHAPTER V

**Vegetables and Vegetable Soups**

Composition and nutritive value. Classification. Points to emphasize. Reasons for cooking vegetables. Ways of serving vegetables. General principles. Experiments. Recipes for vegetables. White sauce, creamed vegetables, scalloped vegetables. Recipes for scalloped dishes, cream soups, and purées. Food values of baked beans, creamed potato, cream of pea soup, cream of tomato soup, cream of potato soup, cream of lentil soup, split pea soup. References . . . . .	88
--	----

## CHAPTER VI

**Milk, Cream, and Butter**

Composition and nutritive value. Experiments with cream, butter, buttermilk; sweet milk, sour milk; cheese; absorption of odors. Recipes for junkets, custards, puddings. Food value of baked custard, rice pudding with eggs. References . . . . .	82
---	----

## CHAPTER VII

**Cheese**

Composition and nutritive value. Recipes for cheese. (Experiments, see Chapter VI.) Food value of macaroni and cheese, rice with cheese and tomatoes. References . . . . .	95
--	----

## CHAPTER VIII

**Eggs, Soufflés, and Croquettes**

Composition and nutritive value. Experiments. Recipes for eggs. Food value of scrambled eggs. Recipes for soufflés. Experiments with fats for frying. Recipes for croquettes. Score card for croquettes. References . . . . .	107
---	-----

## CHAPTER IX

**Meats, Stock Soups, and Gelatin**

Quality of good meat. Composition and nutritive value. Preserved meat. Meat experiments. Cuts of beef, veal, lamb and mut-	
--	--

ton, pork. Soups. Recipes for stock soups ; recipes for meats ; meat sauces. Score card for roast of meat. Gelatin. Composition and nutritive value. Experiments with gelatin. Gelatin desserts. Food value of snow pudding. Score card for gelatin desserts. References . . . . .	PAGE 123
--	-------------

## CHAPTER X

### Poultry

Quality. Composition and digestibility. Dressing and cleaning poultry. Trussing poultry. Directions for boning poultry or birds. Recipes for poultry : sauces . . . . .	153
---	-----

## CHAPTER XI

### Fish and Shellfish

Classes of fish. Freshness of fish. Composition and nutritive value. Preserved fish. Vegetables suitable for serving with fish as a garnish. Sauces for fish. Fish in combination with other food. Cleaning fish. Boning fish. Methods of cooking. Aim in cooking fish. Recipes for fish. Fish sauces. Food value of creamed cod- fish on toast. Shellfish : oysters, clams, scallops, lobsters, crabs. Recipes. References . . . . .	158
---	-----

## CHAPTER XII

### Flour Mixtures

Composition and nutritive value. Experiments with flour, bread, muffins, baking powder biscuits, pastry, cake. Experiments with leavens : sodium bicarbonate, yeasts. Classification of flour mix- tures. References . . . . .	172
---	-----

## CHAPTER XIII

### Batters and Doughs

Recipes : bread, light, quick ; rolls, sticks, buns. Score cards for bread, raised biscuits ; recipes for baking powder biscuits, variations in baking powder biscuits. Food value of baking powder biscuits. Score card for baking powder biscuits. Recipes for griddlecakes and waffles ; timbale cases ; fritters ; doughnuts ; muffins. Food
--

	PAGE
value of plain muffins. Score card for muffins. Recipes for popovers, cream puffs, flour pastes. Classification of cookies. Recipes for cookies. Food value of molasses cookies, hermits. Score card for rolled cookies, dropped cookies . . . . .	189

## CHAPTER XIV

### Cake

General rules for mixing. General rules for baking. Recipes for butter cakes, molasses cakes, sponge cakes, angel food cakes. Food values of hot water gingerbread, chocolate cake, hot water sponge cake. Score cards for loaf cake, layer cake, sponge cake. Recipes for cooked frostings; uncooked frostings; cake fillings . . . . .	218
--	-----

## CHAPTER XV

### Pastry

Recipes for plain paste; puff paste; cheese straws; fillings for pies. Score cards for two-crust pie, one-crust pie, one-crust pie and meringue . . . . .	235
---	-----

## CHAPTER XVI

### Flour Mixtures using Sour Milk, Buttermilk, Sour Cream

Recipes for breads, puddings, cakes, cookies, gingerbread, doughnuts . . . . .	243
--	-----

## CHAPTER XVII

### Salads and Sandwiches

Classification of salad greens, salad foundations, variations in salad dressings. Service of salads. To prepare salad greens. Combinations for salads. Food values of vegetable salad, romaine or lettuce salad. General rules for sandwiches. Classification of conveyors for filling; classification of fillings. Food value of whole wheat bread and cheese sandwiches . . . . .	248
---	-----

CHAPTER XVIII

**Salad Dressings**

Experiments. Recipes for French dressing and variations; cream dressing; boiled dressing; mayonnaise dressing. Food values of mayonnaise dressing, French dressing, boiled dressing. References	PAGE 260
---	-------------

CHAPTER XIX

**Desserts**

Recipes for steamed puddings, pudding sauces. Experiments with frozen desserts. Classification of frozen desserts. Recipes for frozen desserts; ice creams, ices, sherbets, frappés, mousses. Food values of vanilla ice cream, milk sherbet. Score card for sherbets and ices; Philadelphia ice cream; custard ice cream. References for ice cream	266
---	-----

CHAPTER XX

**Sugar and Candy**

Composition and nutritive value of sugar. Experiments with sugar. General directions for fondant. Directions for using fondant. Recipes for candy, candied orange peel, salted almonds. References for sugar . . . . .	284
--	-----

CHAPTER XXI

**Recipes for Fifty Servings**

Recipes for beverages, fruits, cereals, vegetables, cream soups, stock soups, meats, meat substitutes, fish, flour mixtures, salads, desserts, frozen desserts . . . . .	295
--	-----



# LABORATORY MANUAL OF FOODS AND COOKERY

## CHAPTER I

### BEVERAGES

**BEVERAGES** are mixtures of liquids and flavoring material and may be classified as acid, albuminous, starchy, and stimulating. Acid beverages are lemonade, orangeade, grapejuice, and fruit punch. Albuminous beverages are liquids to which is added egg albumin, egg yolk, or milk. Starchy beverages are cereals cooked in a large quantity of water, as a gruel strained and cooked. Stimulating beverages are tea, coffee, cocoa, cocoa shells, and chocolate.

**Food value of beverages.** Acid beverages are valuable because of organic acids and mineral matter ("ash constituents") present. Also because of sugar which is naturally contained as well as that usually added, the stimulation of peristaltic action, the diuretic action, and lastly the appetizing odor and taste.

Albuminous and starchy beverages are valuable because of their increased nutritive value, and because they may be easily taken. Such beverages are primarily designed for invalids, and a considerable amount of nutriment can be taken in this form in the course of a day, especially as milk can be added and the nutritive value of a starchy drink thus greatly increased.

Stimulating beverages are valuable because of the food value of cream or milk and sugar usually served with them. Also because various food products, as bread, rolls, toast, cookies, crullers, cake, often accompany the beverage.

The stimulant of tea, coffee, or chocolate when taken in strict moderation is usually not harmful to adults, but is often refreshing and not followed by the depression which follows the stimulating effect of alcohol.

For description of beverages and standards of purity see Sherman's *Food Products*, pages 436-438 and 465-469.

**Methods of serving beverages.** Beverages to be served cold should be cooled in the refrigerator or ice cream freezer but should not have ice put in them.

Beverages to be served hot should be served fresh from the fire and should not be reheated. Where boiling water is to be used, it should be fresh water boiled and not reboiled water. Tea and coffee should be made in a receptacle which can be tightly covered, as it is the aroma which we wish to preserve.

Fruit beverages may be served with the grated rind of fruit, slices of fruit, small fruits as strawberries and cherries, whole cloves, apollinaris water, or vichy water.

Stimulating beverages may be served hot, cold, or partly frozen.

Tea may be served with milk, sugar, slices of lemon or orange, whole cloves or lime drops.

Coffee may be served with hot milk, cream, sugar.

Chocolate may be served with milk, cream (whipped or unwhipped), sweetened chocolate grated and sprinkled on top of cream, marshmallow, stick cinnamon.

**Fruit acids.** The characteristic acids of fruits are as follows: lemons and oranges, citric acid; apples, malic acid; grapes, potassium acid tartrate.

**The characteristic alkaloids** found in stimulating beverages are for tea, theine; coffee, caffeine; chocolate, theobromine.



The theine of tea has been found identical with the caffeine of coffee. Tannin of tea influences its taste. (See experiments with tea.) Caffetannic acid influences the flavor of coffee. The flavor of both tea and coffee is doubtless also influenced by the volatile oils which they both contain but which are largely lost on long boiling.

Of tea, coffee, and chocolate, the latter has much the highest food value.

## EXPERIMENTS

### Tea

1. — Prepare four cups of tea, A, B, C, D, in the following manner (use black tea):

A. 1 level tsp. tea, 1 c. boiling water (note the temperature at which the water boils). Pour the boiling water through the tea leaves, but do not allow the leaves to remain in the cup.

B. 1 level tsp. tea, 1 c. boiling water. Pour the boiling water over the tea leaves and allow it to stand over the leaves 5 minutes. Decant off the infusion.

C. Repeat B, but do not decant the infusion. Allow it to cool and then reheat it.

D. 1 level tsp. tea, 1 c. boiling water. Pour the boiling water over the leaves and continue the boiling for 5 minutes.

Note the color, odor, and taste of each cup of tea.

2. — *a.* Test 2 tbsp. of each cup of tea with 5 drops of lead acetate solution.<sup>1</sup>

*b.* What change occurs?

*c.* To what is this change due?

*d.* Which method of making tea brings the most tannin into the infusion?

<sup>1</sup> *Lead acetate solution.* Dissolve 18 gm. of lead acetate in 70 ccm. of hot distilled water; to this add 11 gm. of lead oxide. Boil the mixture for 30 minutes with occasional stirring, allow it to settle for a few minutes, and decant the clear liquid. Add enough distilled water to make the volume up to 81 ccm. For ordinary use take 1 part of this solution to 4 parts distilled water. This solution is used as a precipitant in testing infusions and fruit juices.

3. — Compare characteristics of black and green tea by preparing by the best method a cup of tea made from black tea and one made from green tea. Use for each cup —

1 tsp. tea

1 c. boiling water

4. — Compare various kinds of black tea by preparing a cup of tea from each of the following:

“ English Breakfast ”

Orange Pekoe

Flowery Pekoe

Oolong

### Coffee

Have ready the following:

A. Coffee pot.

B. Coffee pot and aluminum cup with perforated sides.

C. Coffee pot and cloth bag.

D. Percolator.

E. Coffee       $\left\{ \begin{array}{l} \text{powdered} \\ \text{pulverized} \\ \text{finely ground} \end{array} \right.$

5.<sup>1</sup> — *a.* Use: coffee pots A, B, C, and percolator D.

2 tbsp. coffee       $\left\{ \begin{array}{l} \text{powdered} \\ \text{pulverized} \\ \text{finely ground} \end{array} \right.$

Use first the finely ground coffee, add 1 cup of cold water, place in the coffee pots and in the percolator, heat until the boiling point is reached. Boil 2 minutes, allow the beverage to stand without cooking 5 minutes.

*b.* Note the color, clearness, odor, flavor.

6. — *a.* Repeat 5 *a.*, using pulverized and powdered coffee in turn.

*b.* Compare the results as to efficiency.

*c.* Compare the results as to color, clearness, odor, flavor, oiliness.

<sup>1</sup> For convenience of reference experiments are numbered consecutively throughout the book.

7. — Repeat the above experiments, boiling the coffee in each instance 4 minutes, 6 minutes, 10 minutes in turn.

8. — *a.* Prepare coffee by the methods used in 7 (boiling 4, 6, 10 minutes), but before putting the coffee into the utensil add 1 tbsp. egg white. Note: Part of the class use  $\frac{1}{2}$  egg shell.

*b.* Note the color, clearness, odor, flavor, oiliness.

*c.* Does the egg white or shell produce any improvement?

Explain.

*d.* By what other method may coffee be cleared?

9. — *a.* Prepare coffee in the utensils used in the previous experiments. Try each of the coffees in succession. Use 2 tbsp. coffee and pour upon it 1 cup of vigorously boiling water. Do not allow beverage to boil, but simmer for 1 minute.

*b.* Compare the results in each case as before.

10. — Prepare coffee as in 5 *a* using 1 c. boiling water instead of cold water. Allow the coffee to boil 4, 6, 10 minutes and compare with that made by other methods.

Which method and which utensils produce the most acceptable beverage?

Is it possible to produce good results by more than one method?

For each utensil which method is best and to what stage should the coffee be ground?

11. — *a.* Test 2 tbsp. of coffee infusion made by each method with 5 drops of lead acetate. See page 3.

*b.* Is the presence of tannic acid shown?

*c.* By which method of making coffee is the most produced?

### Cocoa and Chocolate

Prepare a paste of 2 tsp. cocoa and 2 tbsp. hot water. Use this to correspond with  $\frac{1}{4}$  sq. chocolate.

Perform each experiment first with cocoa, then with chocolate.

12. — *a.* Prepare cocoa and chocolate using:

2 tsp. cocoa paste

$\frac{1}{4}$  sq. chocolate

1 c. cold liquid  $\left\{ \begin{array}{l} \frac{1}{2} \text{ c. water} \\ \frac{1}{2} \text{ c. milk} \end{array} \right.$

*b.* Pour the cold liquid on to the paste or chocolate. Cook in the double boiler 5 minutes after the liquid is hot.

*c.* Compare each as to flavor, sweetness, color.

*d.* What is the result when cold liquid is added to the paste or chocolate?

*e.* Is this a desirable method of preparing cocoa or chocolate?

**13.** — Prepare cocoa and chocolate using the paste and  $\frac{1}{4}$  sq. chocolate by heating the liquid first. Cook in the double boiler 5, 10, 15 minutes, testing flavor and consistency at each stage.

**14.** — Prepare a paste of the chocolate by melting it over hot water and adding 2 tsp. hot water to  $\frac{1}{4}$  sq. chocolate.

*a.* Use the cocoa and chocolate paste and prepare beverages using 1 c. hot milk for each. Pour the hot liquid slowly on to the paste, mixing it in thoroughly each time until a smooth, brown mixture results. Cook this in a double boiler 15 to 20 minutes. Note the flavor and consistency as compared with previous methods.

*b.* To this last beverage add 2 drops vanilla and a grain or two of salt. Is the flavor improved? Why?

*c.* Beat the beverage with a Dover egg beater. Result?

How do you explain the frothy consistency which results?

What differences are noted between cocoa and chocolate as beverages? How are these accounted for?

### Hot Tea

*Ingredients:*

2 tbsp. tea

4 c. boiling water

*Method:*

Follow the method which was found most desirable in the experiments.

### Cold Tea I

*Ingredients:*

2 tbsp. tea

2 qt. cold water

*Method:*

Put tea in a pitcher or glass jar, turn in the cold water and allow it to stand overnight in the refrigerator. Decant the liquid from the leaves and serve ice cold.

### Cold Tea II

*Ingredients :*

2 tbsp. tea                      4 c. boiling water  
4 c. cold water

*Method :*

Prepare tea and boiling water as for hot tea. Dilute the infusion with the 4 cups of cold water. Decant from the tea leaves, allow the liquid to cool, and serve ice cold.

NOTE: *a.* Cold tea is more appetizing if it is served about one half as strong as hot tea.

*b.* In preparing hot tea use only water which is fresh and just beginning to boil.

*c.* Do not use a tin teapot; use a tea ball, crockery or china teapot.

*d.* Do not use tea leaves a second time.

*e.* Never allow tea to boil.

*f.* Do not allow tea to stand over the tea leaves after steeping has been accomplished. If tea has to be kept hot for a time, turn the infusion from the leaves.

### Black Coffee

*Ingredients :*

1 c. coffee                       $\frac{1}{3}$  egg  
 $\frac{1}{2}$  c. cold water              5 c. boiling water  
 $\frac{1}{2}$  c. cold water

*Method :*

Mix coffee,  $\frac{1}{2}$  c. cold water, and egg together, let stand ten minutes in coffee pot. Pour in boiling water and boil gently for five minutes. Remove to warm part of stove, add  $\frac{1}{2}$  c. cold water, pouring some of it down the spout of coffee pot. Serve at once.

### Cocoa

*Ingredients :*

$\frac{1}{4}$  c. cocoa                      1 c. water or coffee (hot)  
 $\frac{1}{4}$  c. sugar                      3 c. milk (hot)

*Method :*

Mix cocoa and sugar together in a saucepan, pour over the hot water or coffee and let boil until a syrup is formed (this cooks the

starch in the cocoa). Add the hot milk, stirring it in slowly, return to a double boiler and let cook 15 to 20 minutes. A few grains of salt and a drop of vanilla may be added just before serving. Serve with whipped cream or beat to a froth with a Dover beater.

### Chocolate

#### *Ingredients:*

4 c. milk,	2 oz. chocolate
or 2 c. milk and	$\frac{1}{3}$ c. sugar
2 c. water	$\frac{1}{4}$ c. water (hot)

#### *Method:*

Grate or cut the chocolate into small pieces, place in upper part of a double boiler, add the sugar and  $\frac{1}{4}$  c. of hot water. Allow the chocolate to melt and cook with the sugar until a smooth paste is formed. Add the milk or milk and water to this chocolate mixture, stirring it constantly with a wooden spoon and adding the liquid very slowly. When the liquid has been added, beat it vigorously with the Dover egg beater and then allow it to cook 15 to 20 minutes.

- NOTE: *a.* If flakes of chocolate appear, the liquid was added in too large quantities at a time.
- b.* Always pour the liquid into the chocolate paste, otherwise the flakes will be sure to appear.
- c.* The long cooking of both cocoa and chocolate is necessary because of the starch which is characteristic of both.
- d.* The flavor of both chocolate and cocoa is improved by allowing it to stand 15 to 20 minutes in a warm place after cooking and before serving.

### Lemon Whey

#### *Ingredients:*

1 c. hot milk	2 tbsp. lemon juice
	2 tbsp. sugar

#### *Method:*

Heat the milk in a double boiler. Add the lemon juice. Cook without stirring until the whey separates. Strain through cheese-cloth, and add the sugar. Serve hot or cold. Garnish with small pieces or slice of lemon.

**Lemonade***Ingredients :*

1 lemon	2 tbsp. sugar
1 c. boiling water	$\frac{1}{2}$ thin slice lemon

*Method :*

Wash and wipe lemon ; cut a very thin slice from middle ; use this for garnish. Squeeze juice into a bowl (keeping back the seeds), add the sugar and boiling water ; cover, and put on ice to keep cool. Strain and pour into a glass or sherbet cup. Cut half the slice of lemon into two pieces, and use as garnish in glass ; a few berries or slice of orange may be used.

NOTE : The quantity of sugar in lemonade may be varied, depending upon the acidity of the fruit.

**Grape Juice and Egg***Ingredients :*

1 egg	1 tbsp. sugar
$\frac{1}{2}$ c. rich milk	$\frac{1}{4}$ c. grape juice
$\frac{1}{4}$ tsp. powdered sugar	

*Method :*

Beat the yolk and white separately very light. To the yolk add milk, sugar, and grape juice, and pour into glass. To the white add a little powdered sugar and a tbsp. of grape juice. Serve on yolk mixture. Chill all ingredients before using.

**Oatmeal Water***Ingredients :*

1 tbsp. oatmeal	salt
1 tbsp. cold water	1 qt. boiling water

*Method :*

Mix oatmeal and cold water, add salt, and stir into the boiling water. Boil three hours ; replenish the water as it boils away. Strain through a fine sieve or cheesecloth. Season, serve cold. Different brands of oatmeal vary considerably in the amount of water which they take up in cooking, and sufficient should always be added to make this drink almost as thin as water.



**Barley Water***Ingredients:*

1½ tbsp. pearl barley

1 qt. cold water

salt

*Method:*

Wash barley, add cold water and let soak several hours or over night. Drain and add the fresh, cold water, boil gently over direct heat two hours, or in a double boiler steadily four hours, down to one pint, adding water from time to time; season with salt. Strain through muslin.

NOTE: Cream or milk may be added, or lemon juice and sugar. Barley water is a slightly astringent or demulcent drink used to reduce laxative condition.

## REFERENCES

BAILEY. Source, Chemistry, and Use of Food.

BOLAND. Handbook of Invalid Cookery.

FRIEDENWALD and RUHRAH. Diet in Health and Disease.

HAUSMANN. Home Manufacture and Use of Unfermented Grape Juice. United States Department of Agriculture, Farmers' Bulletin No. 175 (1903).

KAKUZO. The Book of Tea.

KELLOGG, ELLA. Science in the Kitchen, Principles of Healthful Cookery.

LEACH. Food Inspection and Analysis.

LINCOLN and BARROWS. Home Science Cook Book.

MEUNIER, L., Fruit Juices. Ontario Department of Agriculture, Fruit Branch Bulletin No. 200 (1912).

PATTEE. Practical Dietetics with Special Reference to Diet in Disease.

PRACTICAL DIETETICS. Demonstration Iowa State College Agriculture Extension Department. Short Course Class Notes, No. 8.

SACHSE. How to Cook for the Sick.

SHERMAN. Food Products.

## CHAPTER II

### FRUITS

FRUITS are divided into five general classes — small fruits, orchard fruits, grapes, citrus fruits, and tropical fruits.

These are available either in the fresh or dried state and all may be served raw or cooked.

Fruits vary greatly in chemical composition. Their value in the diet is due chiefly to the ash constituents rather than to the protein, carbohydrate, or fat content. (See Sherman's *Food Products*, pages 335-338 for percentage composition and pages 347-349 for percentage of ash in the edible portion.)

When their energy value (due chiefly to carbohydrates) and their relative richness in certain important ash constituents are considered, the staple fruits are found to be more economical articles of food than is generally recognized. Except near the regions where grown, the dried fruits are usually more economical than the fresh.

The dietetic value of fruits is greater than could be inferred from the percentage composition alone, because of their refreshing and other desirable qualities which cannot as yet be subjected to quantitative measurement. The agreeable "ethereal" and acid flavors of fruit are helpful to appetite and doubtless also to digestion.

Fruit may be either a laxative or an astringent or both, as in the case of fruits which contain astringent substance in the skin, while the pulp is laxative. Fruit is also valuable for its antiscorbutic property and often seems to act as a mild and

beneficial diuretic. The cellulose is useful in giving bulk to the food residues and preventing their stagnation in the intestine.

A given fruit often shows quite different properties at different stages in ripening, the most distinct changes in composition being usually a decrease in acid and starch with an increase in sugar content. Pectin substances present in underripe fruits cause fruit juices to jelly.

The desirability of increasing the use of fruit as food and the variety of attractive properties possessed by fruits and fruit products, lend special interest to the subject of fruit cookery.

#### **General rules for preparation :**

Small and soft fruits need careful handling when washed. Fill bowl with cold water, put fruit in and remove with strainer or perforated spoon in order not to crush.

Hard fruits, if small, may be washed in a colander under running water, or if large wiped with a damp cloth.

Decayed spots, bruises, or worm holes should be removed, preferably with a silver knife.

Cover pared fruits with cold water until ready to cook.

Oranges, lemons, and grapefruit should be scrubbed with a brush ; bananas peeled and scraped, raspberries and blackberries removed from baskets with a fork to avoid crushing.

Dried fruits should be examined and washed in several waters.

#### **Reasons for cooking fruit :**

To soften cellulose.

In some instances to insure digestibility.

To further variety in serving.

In some instances to destroy bacteria.

#### **How to purchase :**

Fruits are economical when purchased in season, and if storage facilities allow, should be bought in quantity. Freshness and cleanliness should receive first consideration. Dried fruits may take the place of fresh fruits when the latter are not in season. The cost of fruits varies with locality — study the market in your own section.

## EXPERIMENTS

## Apple

**15.<sup>1</sup>**— Grate an apple into a bowl. With a wooden spoon thoroughly mash the solid matter with the juice.

What change in color is observed?

**16.**— Add about 2 tbsp. of water to the mixture obtained in Expt. 15, and strain the liquid through *wet* cheesecloth into a bowl. Filter the juice through a *wet fluted filter* and keep it for Expt. 17 and 18 below. To portions of the apple pulp apply:

- a. The Millon test <sup>2</sup> for protein.
- b. The iodine test for starch.<sup>3</sup>

**17.**— To small portions of the clear filtered apple juice obtained in Expt. 16, apply the following tests:

a. Heat about 10 cc. to boiling in a test tube and notice whether coagulation takes place. Filter through a wet fluted paper and test the residue on the paper by adding a few drops of nitric acid. If protein is present, it will be turned yellow by the nitric acid.

b. Test for starch by adding iodine solution. (The portion of solution to which this test is applied must be cool.)

c. Test for "reducing sugars" by mixing a small amount of the clear juice with an equal volume of the Fehling-Benedict <sup>4</sup> solution, allow to stand a minute and note any change of color, then boil for two minutes. (Reference should be made to Leach's *Food Inspection*

<sup>1</sup> For convenience the experiments are numbered consecutively throughout the book.

<sup>2</sup> *Millon's reagent*: One part, by weight, of mercury dissolved in two parts of strong nitric acid. Dilute the solution with twice its bulk of water. After standing 24 hours, the supernatant liquid should be decanted from the precipitate. Proteins are colored red by this solution. Warming aids the development of the color.

<sup>3</sup> *Starch, iodine reaction*: To the material to be tested for starch add a few drops of iodine solution (iodine dissolved in a water solution of potassium iodide). A blue, violet, or purple color indicates the presence of starch.

<sup>4</sup> *Fehling-Benedict solution*:

34.65 gm. crystallized copper sulphate made up to 500 cc. with distilled water.	} made up to 500 cc. with distilled water.
173 gm. Rochelle salt	
100 gm. anhydrous sodium carbonate	

and Analysis, Sherman's *Organic Analysis*, or Woodmann's *Food Analysis*.)

d. Test for proteins by means of Millon's reagent, making the test as closely comparable with that of the pulp as possible.

#### 18. — Preparation of pectin.<sup>1</sup>

a. Neutralize the remaining apple juice with a sufficient quantity of caustic soda (sodium hydroxide) solution.

b. Heat the neutral fluid to boiling to complete the coagulation of the protein.

c. Filter on a wet *fluted* paper while the liquid is hot.

d. To the *cold* filtrate in a beaker or glass add alcohol, little by little, in sufficient quantity to produce a bulky, gelatinous precipitate of pectin. An equal volume of alcohol may be required. (Save this for Expt. 19.)

#### 19. — Properties of pectin. Continuing the work begun in Expt. 18:

a. Allow the alcohol to evaporate after decanting off as much as possible.

b. Dissolve the pectin in water and concentrate by heating.

c. Turn into beaker and let cool. The gelatinizing power of pectin will be shown.

NOTE: Other fruits or vegetables may be used to further demonstrate the above principles. Compare the experiments on vegetables, jellies, and gelatin described in later chapters.

20. — Decay of fruit (A). Place in a jar a number of apples that have been bruised or cut, packing them in rather tightly. Scatter in the jar some spores of the common mold which will usually be found on moldy lemon. Close the jar and set aside. Prepare a second jar with some whole clean apples and treat in the same way. Compare the two jars for a week or two to see if decay makes its appearance in either or both of the jars. Does bruising hasten the decay of the fruit?

<sup>1</sup> Pectin, to which the essential gelatinous consistency of fruit jellies is due, is a substance belonging to the group of carbohydrates. It is entirely different from gelatin, which is a peculiar protein obtained from bone and other animal tissues and forms the basis of animal jellies.

**21.—Decay of fruit (B).** Make a cut through the skin of an apple with a knife blade that has been previously dipped into the midst of a mass of mold spores. Put the apple aside in a jar and examine carefully until it decays. Note that the decay begins rather quickly and starts at the point of the cut where the spores were inoculated.

**22.—Experiment.**

**Apple Sauce**

1 apple

5 tbsp. water

2 tbsp. sugar

$\frac{1}{8}$  tsp. nutmeg

Prepare apple sauce by paring and slicing the apple and cooking it in the water until soft. Let half the class (*a*) add sugar at beginning of process; the other half (*b*) add sugar at end of process.

Use the thermometer constantly and compare the temperatures throughout the making of the apple sauce.

Account for differences in color, taste, and consistency.

**23. Experiment.**

**Baked Apple**

Prepare baked apples in the following ways: in each case core and fill cavity with sugar.

*a.* Wash and remove skin from apple. Bake in slow oven. (Temperature?)

*b.* Repeat with a second apple but bake in a hot oven. (Temperature?)

*c.* Wash and core third and fourth apples. Do not remove skin. Bake one in slow, and one in hot oven.

*d.* Wash and core fifth and sixth apples. Make a slit around each apple, through the skin. Bake one in a hot oven, one in slow.

Which method and temperature produces best result?

**Baked Apples***Ingredients :*

8 apples	$\frac{1}{2}$ c. sugar
$\frac{1}{4}$ tsp. cinnamon	

*Method :*

Select apples of uniform size. Wipe and core apples. Make an incision in the skin to allow steam to escape, place in baking dish, and fill cavities with sugar and spice. Surround apples with boiling water and bake in a hot oven until soft, basting frequently.

**Variations**

The apples may be pared before coring. The cores may be filled with :

brown sugar	sugar and lemon juice
raisins and nuts	sugar and orange juice
cooked prunes and nuts	cooked oatmeal and raisins
jelly	uncooked custard

**Steamed Apples**

Wipe, pare, and core apples. Place in double boiler, cover and steam until apples are soft. Serve with sugar and cream.

**Apples-in-Bloom**

Wipe and core red apples. Steam until tender and remove skins. The apples should be pink when steamed.

**Apple Sauce***Ingredients :*

8 apples	water
1 c. sugar	nutmeg

*Method :*

Wipe, pare, and slice apples. Cook in a small amount of water until soft, add sugar and cook until sugar dissolves. Strain. Grate nutmeg over the sauce.



**Stewed Apples***Ingredients :*

8 apples	1 c. water
1 c. sugar	2 tbsp. lemon juice

*Method :*

Wipe and pare apples. Core and cut in halves, quarters, eighths, or circles, or cut in balls with vegetable cutter. Place in cold water while preparing a sirup of the sugar and water by boiling 3 minutes. Cook apples, a few at a time, in the sirup until soft. Remove all sirup, add lemon juice, and boil until thick. Strain the thick sirup and pour it upon the apples.

**Baked Bananas**

Peel bananas, scrape with silver knife, and cut in halves lengthwise. Place on buttered pan, sprinkle with sugar and lemon juice, and bake in a slow oven until soft, basting often with the sirup.

Bananas may also be baked in the skins.

**Baked Crabapples**

Crabapples should be left whole. If cooked slowly enough the liquid in the pan will form a red jelly. This should be served with the crabapples.

**Baked Quinces***Ingredients :*

8 quinces	$\frac{3}{4}$ c. sugar
	1 $\frac{1}{2}$ c. water

*Method :*

Wipe, quarter, core and pare quinces. Put in a baking dish, sprinkle with sugar, add the water, cover and cook until soft in a slow oven.

**Baked Pears***Ingredients :*

8 pears	1 c. sugar
	1 c. water

*Method :*

Same as for quinces. Small pears may be baked whole.

**Cranberry Sauce***Ingredients:*

1 qt. cranberries	2 c. sugar
2 c. water	

*Method:*

Remove bruised berries, wash others in a strainer, and cook them in water until they begin to burst. Add sugar and cook until thoroughly soft. Skim.

**Cranberry Jelly***Ingredients:*

1 qt. cranberries	2 c. sugar
1 c. water	

*Method:*

Cook cranberries in water until soft and press through a strainer. Add sugar to the pulp. Stir until sugar dissolves, then boil until it will jelly when dropped on a cold plate. Pour into molds previously wet with cold water.

**Spiced Cranberry Jelly***Ingredients:*

1 qt. cranberries	12 cloves
1 c. water	3 allspice berries
2 c. sugar	small piece cinnamon
$\frac{1}{8}$ tsp. salt	

*Method:*

Tie spices in cheesecloth. Cook with berries and water until berries are soft. Strain, and proceed as for cranberry jelly.

**Dried Fruit***General Rules.*

1. Wash quickly in several waters.
2. Soak in cold water overnight.
  - a. Shortens time of cooking.
  - b. Develops better flavor.
  - c. Lessens amount of sugar required.
3. Cook in this water until tender, using flame or the fireless cooker.
4. Add sugar to softened fruit and cook a few minutes longer.

**Prunes***Ingredients:*

1 lb. prunes	1 qt. water
1 tbsp. lemon juice	1 tbsp. orange juice
$\frac{1}{4}$ c. sugar	

**Apricots***Ingredients:*

1 lb. apricots	1 qt. water
$\frac{1}{2}$ c. sugar	

**NUTRITIVE VALUES OF COOKED FOODS**

Because of variable changes in water content during cooking, as well as variations in recipes used, it is not satisfactory to attempt general statements of composition of cooked foods and as a rule only raw foods are included in the standard tables. It is, however, entirely feasible for the student of cookery in any given operation to weigh the ingredients and the final product and calculate the composition and food value of the latter. Full directions and data for such calculations will be found in Rose's *Laboratory Handbook for Dietetics*.

To illustrate and encourage such calculations the food values of typical cooked foods will be shown at intervals throughout this book and it is recommended that the laboratory work in cookery be made to include the accurate weighing of the finished product and the calculation of its food value in as many cases as possible.

For the sake of completeness and because of the importance now attached to these three elements, the food values here given include data for calcium, phosphorus, and iron. When time is limited, the protein, fat, carbohydrates, calories, and cost may be calculated without the ash constituents.

## EXAMPLES OF CALCULATED FOOD VALUES

## Apple Sauce

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST ¢	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Apples . . .	3	159	.64	.79	22.58	100	.034	.022	.05	.0005
Sugar . . .	6 tbsp.	80.2			80.2	321	.0106			
Water . . .	$\frac{1}{2}$ c.									
Total cooked	$\frac{3}{4}$ c.	239.2	.64	.79	102.78	421	.0446	.022	.05	.0005
100-Calorie } Portion <sup>1</sup> }	3 tbsp.	56.95	.15	.19	24.47	100	.0106	.005	.012	.0001

## Stewed Prunes

Prunes . . .	25	226.8	4.08		141.07	580	.06	.116	.464	.0052
Sugar . . .	5 $\frac{1}{4}$ tbsp.	75			75	300	.008			
Water . . .	2 c.									
Total cooked	1 $\frac{1}{2}$ c.	538	4.08		216.07	880	.068	.116	.464	.0052
100-Calorie } Portion <sup>1</sup> }	3 prunes + sirup	60.7	.46		24.42	100	.008	.013	.052	.0006

## REFERENCES

- HAUSMANN. Home Manufacture and Use of Unfermented Grape Juice. United States Department of Agriculture, Farmers' Bulletin, 644 (1915).
- LANGWORTHY. Raisins, Figs and other Dried Fruits and Their Use. United States Department of Agriculture, Yearbook for 1912, pages 505-522.
- LANGWORTHY. Use of Fruits as Food. United States Department of Agriculture, Farmers' Bulletin, No. 293 (1907).

<sup>1</sup> Also called Standard Portion (S. P.)

- LANGWORTHY and MILNER. Some Results Obtained in Studying Ripening Bananas with the Respiration Calorimeter. Yearbook of U. S. Department of Agriculture for 1912.
- MILAN and GARDNER. Comparative Cooking Qualities of Some of the Common Varieties of Apples Grown in Oregon. Oregon Agricultural College Experiment Station, Bulletin No. 124.
- MORSE. The Cold Storage of Apples. New Hampshire College Agricultural Experiment Station, Bulletin No. 93 (1902).
- ROSE, FLORA. Preservation of Food in the Home. Part 1, Cornell Reading-courses. Food Series No. 4.
- SCOTT. Fruit Addition to the Diet of the Growing Child. American Medicine, vol. 19, pages 416-420 (1913).
- SHERMAN. Food Products.

## CHAPTER III

### CANNING AND PRESERVING

#### Fruit

Fruit and vegetables may be preserved when in season for use out of season by the following methods :

1. canning, various methods
2. preserving, various stages
3. jelly making
4. pickling
5. spicing
6. salting
7. drying

All fruits and vegetables are not prepared in the same way. Suitable for canning are :

#### *a. Fruits*

pears	plums	strawberries
peaches	pineapple	raspberries
apricots	cherries	blueberries
apples	blackberries	

#### *b. Vegetables*

peas	carrots	beans
corn	asparagus	beets
	tomatoes	

Fruits suitable for preserving are :

#### *a. Preserve*

strawberries	quince	blackberries
large currants	grapes	cranberries
plums	gooseberries	

*b. Jam*

strawberries	grapes	blackberries
plums	raspberries	currants
elderberries	cranberries	

*c. Marmalades*

apricot	cranberry
plums	grapefruit
peaches	lemon
apple — sweet, sour	quince
crabapple	orange

yellow tomato

*d. Butters*

crabapple	apple
quince	grape

*e. "Honey" (so called)*

sweet apple	lemon	quince
grapefruit	yellow tomato	kumquat

*f. Conserves*

plums, oranges, and lemon	peach, currants, lemon
plums, lemon, raisins	pears, lemon, ginger root
grapes, lemon	prunes, lemon, orange
raisins, rhubarb	orange, grapefruit, lemon
figs, rhubarb	kumquat, orange
peach, lemon, orange	cranberries, lemon, raisins
nuts in combination with any of the above	

**Fruits suitable for jelly making are :***a. Very juicy fruits*

strawberries	elderberries
raspberries	plums
blackberries	currants

grapes, cultivated and wild

*b. Less juicy fruits*

peaches	quince
apricots	cranberries
apples — sweet, sour, crabapple	

**Fruits suitable for pickling are :**

tomatoes — red, yellow	peaches
blackberries	pears
cucumbers	peppers — red, green

**Vegetables suitable for pickling are :**

cauliflower	beets
cabbage	onions

**Fruits suitable for spicing are :**

blackberries	pears
peaches	red tomatoes

**Fruits suitable for salting are :**

cucumbers, large and small

**Fruits suitable for drying are :**

currants	apricots
grapes	plums
peaches	prunes
pears	cranberries
apples — sweet, sour	

**Fruits suitable for beverages are :**

grapes	apples — sweet, sour
currants	cherries
raspberries	lemons
elderberries	oranges



**Preservation of fruits is secured by :**

1. Heat and exclusion of air  
Ex. — canned peaches
2. Exclusion of air but heat not necessary because the material itself is strongly acid.  
Ex. — canned tomato, canned rhubarb
3. Strong acids.  
Ex. — pickled pears
4. Strong brine  
Ex. — salted cucumbers
5. Heavy solution of sugar.  
Ex. — preserves, jams, conserves, butters, honey, jellies.

**Relation to Microorganisms**

All the above methods of preserving fruits and vegetables depend upon either destroying, or preventing the action of microorganisms which would cause the food to ferment, decay, or become moldy.

The microorganisms which thus spoil or injure food are certain species of the three groups :

- a.* Molds.
- b.* Yeasts.
- c.* Bacteria.

**Molds** are seen often as yellow, green, or white growths, very beautiful in color and arrangement, upon lemons, oranges, bread, jams, jellies, and sirups.

Some typical forms often found on food are :

bread mold — *Mucor stolonifer*

green cheese mold, or blue mold — *Penicillium glaucum*

mold of decaying vegetation :

blue green — *Aspergillus fumigatus*

yellow — *Aspergillus flavescens*

black — *Aspergillus niger*.

**Yeasts** cannot usually be seen without the microscope, but evidence of their work is shown by fermentation of fruit juices accompanied by bubbles of gas or a loud pop when a cork or cover is removed.

**Bacteria** are all too small to be seen without a good microscope. The work of bacteria is shown generally by a disagreeable sour taste often accompanied by an unpleasant odor with or without an evolution of gas.

The following experiments will illustrate the work of molds, yeasts, and bacteria, but the detailed study of these organisms and the changes which they bring about in food materials is a science in itself and one of the greatest interest and importance to all students of foods and cookery. The reading and study of Buchanan's *Household Bacteriology* (which treats of the yeasts and molds as well as the bacteria of economic importance) is especially recommended.

## EXPERIMENTS

### 24. — Collection of mold for study.

*a.* Expose a piece of moist bread to the air of the room for about 10 minutes. Keep in a moist chamber and watch for the development of mold. A jelly glass inverted over the bread on a plate will do for the glass chamber.

*b.* Expose a dish containing a freshly opened baked potato to the air of the room for about 10 minutes. Cover; keep in locker and watch for the development of mold.

*c.* Bring into the laboratory anything that you can find on which mold is growing.

**25. — Description of mold.** Describe briefly the general appearance of these various forms under a small magnifying glass (15 diam.) or under a dissecting microscope (15 diam.).

Describe briefly the naked eye appearance of these various molds that appear in the laboratory.

**26. — Mold on bread.** Place several slices of bread under a bell glass or any dish that will protect it from evaporation. Battery jars, large beakers, or even common bowls will answer. Moisten the bread with water and put aside in a warm place (80°–90° F.). After two or three days the bread will usually show signs of white mold. Allow the mold to grow until some color appears and then determine, if possible, whether there are more than one species of mold on the bread.

**27. — Molds on different foods.** Under separate bell glasses place bits of cheese, some pieces of lemon, and a bit of banana. Each of these should be moist. Cover and put aside dish as in the last experiment. Molds will grow in a few days, but probably different species will grow upon the different materials. Compare the molds and determine how many kinds can be seen.

**28. — Experiment to show the mycelium.** Place a little fruit juice, such as may be obtained from canned fruit, in two tubes or in homœopathic vials and drop a few mold spores from the last experiment, or a little dust from the floor upon the surface of the liquid. Set aside to grow and notice how the molds spread and send fine threads into the liquid. Later notice that colored masses of spores grow in the air upon the surface of the liquid but not in the liquid below.

**29. — Spores.** After the molds of the previous experiments have begun to produce spores, as shown by the appearance of some color, remove a little spore material from the surface with a knife blade or a platinum wire and examine under a microscope. For this purpose a compound microscope is necessary, since the spores are very small.

**30. — Growth of mold from spores.** Moisten a bit of bread and transfer with a platinum wire a little bit of the spore mass from a vigorously growing mold to the surface of the bread. Cover with

a bell glass and set aside for growth. Examine every day and note that molds start from the points where the bread was inoculated with the mold spores.

**31. — Mold spores in dust.** Melt gelatin<sup>1</sup> in 7 prepared test tubes, and pour it from each into sterilized petri dishes. Replace the cover upon the dish and allow the gelatin to harden. Label the petri dishes A, B, C, D, E, F, and G. Proceed as follows:

A. Sweep a little dust from the floor and scatter over the prepared gelatin in *A*. Replace the cover and allow the dish to remain in a cupboard until molds begin to grow. Note the number of hours or days until a growth appears. Obtain dust from the following sources and proceed as in *A*.

B. Dust from a crack in the floor.

C. Shake a dry duster over the gelatin.

D. Shake a damp duster over the gelatin.

E. Shake the hem of a skirt over the gelatin.

F. Expose a plate of gelatin to the air of the room while sweeping.

G. Expose a plate of gelatin to the air of the room 2 hours after sweeping and dusting thoroughly.

NOTE: The above experiments may be performed using moist bread instead of petri dishes of gelatin, but the results are not as impressive. Bread can be used, however, if gelatin is not at hand.

**32. — The effect of drying.** Place under separate bell glass two slices of bread, one of which is damp, either naturally or slightly

<sup>1</sup>*Preparation of gelatin culture media:* To 100 grams of gelatin add 900 cc. of water and about 5 grams of Liebig's Extract of Beef and cook in double boiler for 5 minutes. While still hot filter the material through absorbent cotton. In using absorbent cotton for this purpose, a large funnel should be used and the absorbent cotton wet with hot water, placed in it. The liquid is poured into the cotton and it will run through readily, coming out as a tolerably clear solution. Some of the filtered jelly is to be placed in sterilized flasks and some in test tubes, about 10 cc. in each. Plug the flasks and test tubes with cotton and steam the jelly in a common steamer for 30 minutes. At the end of 24 hours it should again be placed in the steamer and steamed for half an hour. Once more set it aside for 24 hours and upon the third day steam it again for half an hour and cool. Material thus prepared should give a clear, slightly brownish jelly, which, if properly sterilized, will keep indefinitely. It should be acid to litmus paper.

moistened with water, and the other dried. Leave for two or three days and notice the effect of drying in preventing the growth of molds. If one slice remains dry, no molds will grow upon it though the other soon becomes covered.

**33. — The effect of boiling temperature.** In each of two test tubes of gelatin place a small quantity of mold spores. Melt the gelatin in the tubes at as low a heat as will melt it. Pour the contents of one tube into a petri dish and cover at once. Place the other tube in a beaker of boiling water and allow the water to boil briskly for half an hour, after which the gelatin is to be poured into a petri dish and treated like that in the first tube. Set both dishes aside for mold growth and examine at intervals for several days, noticing whether molds develop in both dishes or only in the first. If they grow in both, note the relative abundance in the two dishes.

**34. — Effect of low temperature.** Prepare two plates of hardened gelatin and sow mold spores upon the surface of each. Leave one in the ordinary room temperature and place the other in an ice chest or some other place where the temperature is low. Compare day by day, and determine the effect of low temperature in checking or stopping mold growth. Do *any* molds grow upon the dish placed in the ice chest?

**35. — Effect of air currents.** Moisten a slice of bread and sow mold spores upon it, or allow it to mold spontaneously under a bell glass. After it shows a luxuriant growth of mold, remove the bell glass and leave it exposed to brisk currents of the air. Notice how the growth of the mold ceases and the delicate mycelium flattens down close to the bread.

**36. — Molds in cheese.** Obtain a bit of Roquefort cheese. Cut it open and remove a bit of the green mass in the middle by means of a knife point or platinum wire. Sow this substance upon the surface of a dish of hardened gelatin and set aside for growth. After two or three days, the molds will begin to develop and may be studied with a microscope. When they begin to produce spores, they should, if possible, be studied sufficiently to determine the species.

## EXPERIMENTS ILLUSTRATING THE ACTION OF BACTERIA

### 37. — Putrefaction.

Place in a series of test tubes a, b, c, d, e, f, g, h, with a little cold water, the following :

- a* — a small piece of chopped raw meat
- b* — a small amount of white of egg
- c* —  $\frac{1}{4}$  tsp. bread flour
- d* —  $\frac{1}{4}$  tsp. cornstarch
- e* —  $\frac{1}{4}$  tsp. cane sugar
- f* — a small amount of ground dried peas
- g* —  $\frac{1}{4}$  tsp. melted butter
- h* —  $\frac{1}{4}$  tsp. olive oil.

Cover each test tube with a piece of cheesecloth or stop with cotton.

Place all the test tubes together in a warm place for three days and watch to determine which will putrefy and in what order.

Putrefaction can be detected by the disagreeable odor and slimy condition of the water.

**38. — Effect of moisture.** Place a small amount of the following foods in dry test tubes a, b, c, d, e, f.

In a duplicate series place the same foods, but moisten each with water.

Allow all to remain in a warm place and compare at the end of 3 days.

Notice the effect of the water in evidently promoting putrefaction.

Foods — dry and wet.

- a* — dried crushed peas.
- b* — oatmeal
- c* — bread
- d* — entire wheat flour
- e* — bread flour
- f* — graham cracker

**39. — Effect of temperature.** Place bits of meat with a little water in three test tubes. Put the first tube in an ice chest, the second in

ordinary room temperature, and the third close to a stove or radiator where the temperature is high. Notice the rapidity of putrefaction in each case.

**40. — Effect of boiling.** Chop finely some raw beef and place it in water, warming slightly, but not heating it to more than 130° F. Divide into two parts, place each in a test tube, setting one aside without further treatment, but bringing the other to a brisk boil for a moment and then setting beside the first. At the end of twenty-four hours, examine to determine if putrefaction has occurred.

**Effect of freezing.** A visit to a cold storage plant with subsequent discussions will be more beneficial than an experiment to show the effect of freezing upon bacteria.

## EXPERIMENTS ILLUSTRATING YEASTS AS RELATED TO FRUITS AND SIRUPS

**41. — Fermentation of cider.** Grind up a few apples and strain the juice from the same by squeezing through cheesecloth. Collect the juice in test tubes and allow it to stand for a few days. A fermentation soon appears and the juice turns to cider. Examine the sediment with a microscope and detect the presence of yeast. Close up the tube with a cotton plug and leave it for a number of weeks, determining whether it subsequently becomes acid by the development of acetic acid.

**42. — Fermentation of grape juice.** Proceed as above, using grapes instead of apples. The juice will become wine if fermentation occurs properly.

**43. — Effect of temperature.** Prepare 3 tubes with molasses and water as above described and inoculate each with 3 drops of yeast in water. Place one tube in a refrigerator, a second in a moderately warm temperature, above 70° F., and a third in a warmer place, near a stove or radiator (temp. about 90° F.). Compare the three at the end of three, six, and twenty-four hours, and note the effect of temperature upon growth.

**44. — Effect of light.** Prepare two tubes in the same way and set one in a bright light and the other in a dark place. Keep both tubes

at the same temperature and determine whether light has any effect upon the rapidity of growth.

**45.** — Make a small cavity in the surface of a glass of jelly.

Place a drop of fermented grape juice in the cavity, replace the paraffin and tin covers, and allow the jelly to remain in a dark cupboard.

Examine after three days and notice the changes which have occurred in:

1. taste
2. odor
3. consistency

**46.** — *a.* Allow jelly to remain uncovered for a few minutes after it has cooled. Place the tin cover on jelly glass and set aside in warm, dark place.

*b.* Examine daily for growths which will soon appear.

*c.* Try to determine what kinds of mold appear.<sup>1</sup>

*d.* What is the coral pink mass which will probably appear?

*e.* Allow the action of microorganisms to continue until the jelly becomes semi-liquid. Place it in a bottle and cork tightly.

*f.* Keep the bottle in a warm place and notice the changes taking place.

*g.* What are the bubbles and froth which appear when the cork is removed?

*h.* What microorganisms other than molds have been at work?

**47.** — *a.* Partly fill a sterile jar *a* with hot peaches and sirup just ready for canning. Repeat in a second jar *b*.

*b.* Adjust the rubber band and seal *a* to keep out the air. Omit the rubber band on *b*, but clamp down the cover.

*c.* Place *a* and *b* together with a jar filled and sealed and containing no air bubbles in a warm, dark place. Compare daily for signs of the action of microorganisms.

<sup>1</sup> An idea of the probable kind may be obtained by noting color and general appearance and comparing with what has already been learned. For actual identification the "key" at the back of Buchanan's *Household Bacteriology* will be found most useful.



*d.* Compare *a* and *b*. Why should *a* show molds when the outside air is excluded?

*e.* Why does no change occur in the third jar?

48. — From these experiments what conclusions do you make as to:

*a.* The covering of jelly or jams with hot paraffin or paper wet in alcohol.

*b.* The exclusion of air or air bubbles from a canned mixture.

*c.* The rate of action of microörganisms in a solution as jam or jelly compared with that in a sirup as canned peaches.

*d.* In what way can sugar in large amounts act as a partial preservative of fruits?

### Definitions

As usage differs somewhat the following definitions are given to show the sense in which each of the terms is used in this book.

Canned food — food products preserved in air-tight containers with or without heat and addition of sugar or acid.

Preserves — whole fruit or large pieces of fruit in a heavy solution of sugar.

Jams — fruit which is finely divided or reduced to a pulp in a heavy solution of sugar.

Marmalades — fruit pulp in a finely divided condition to which may be added various spices and fruit flavors, together with a smaller amount of sugar than we find in jams.

Butters — fruit pulp very finely mashed, spiced, and often flavored with lemon.

“Honey” — fruit sirup with dense solution of sugar but still liquid.

Conserves — mixtures of fruit more or less finely divided in a fairly heavy solution of sugar, semi-liquid.

Juices — fruit juices with or without sugar, lemon, or other flavoring.

### Utensils necessary in Preserving Fruits

scales

measuring cup, any material not tin

saucepan, any material not tin

new rubbers to fit jars

perfect covers for jars, — tin, glass

wooden spoon

silver knife for removing skins.

silver fork for removing bubbles from inside of jar

jelly bag of heavy material or several thicknesses of cheesecloth  
containers for product

glass jars

stone crocks

jelly glasses

porcelain jars

glass bottles

paraffin

corks

### General Directions

#### I. — *Canning without sugar.*

*a.* Wash the jars and place them together with their covers in cold or slightly warm water. Bring to the boiling point and allow them to boil for 20 minutes. Place a wooden rack in kettle before putting in jars.

*b.* Wash and prepare the fruit or vegetable in the desired shape for canning.

*c.* Place the prepared fruit in the sterile jars; do not wipe the jars on the inside. Arrange the cover but do not seal; place the jars in warm water and boil or steam the proper length of time for the given fruit or vegetables (see recipe).

#### II. — *Canning with sugar.*

*a.* Use one third as much sugar as fruit (by weight).

*b.* Use 4 c. of water to each lb. of sugar.

*c.* Prepare a sirup of the sugar and water by dissolving the sugar in the water and boiling the solution one minute.

*d.* Canning may be accomplished by the following:

1 *a.* Place the prepared fruit in sterile jars, covering fruit with the sirup, adjust the cover and steam or boil the required length of time for each fruit.

2 *a.* Allow the prepared fruit to boil in the sirup until pulp is soft. Place fruit in sterile jars as soon as cooked, cover with the sirup, remove the air bubbles, cover and seal air-tight.

III. — *Preserving.*

## 1. Preserves

a. Three fourths as much sugar by weight as fruit measured by weight.

b. To each pound of sugar add 1 c. of water.

c. Heat water and prepared fruit to the boiling point, allow them to boil one minute.

d. Add the sugar and continue the boiling until the sirup is thick.

## 2. Jams

a. Three fourths by weight as much sugar as fruit measured by weight.

b. 2 c. of water to each pound of sugar.

c. Boil prepared fruit and water together for 5 minutes. Add the sugar and continue cooking until the sirup jellies.

NOTE: Fruits with large seeds should be put through the colander after boiling five minutes and before the sugar is added. Rub the pulp through carefully, but keep back the seeds.

## 3. Marmalades (in general)

a. One half by weight as much sugar as fruit measured by weight.

b. Three c. of water to each pound of sugar.

c. Boil fruit until soft enough to be put through a colander, reduce to a pulp, add the sugar, and cook until mixture is very thick.

## 4. Butters

Practically the same as marmalade. Do not allow the mixture to become as dense as marmalade.

## 5. Honey

special recipes

## 6. Conserves

special recipes

## 7. Jellies — 2 methods

a. Wash and prepare the fruit for cooking, allow it to cook in its own juice until very soft.

*b.* Strain the juice through a jelly bag (without squeezing).

*c.* Measure or weigh the juice and add an equal amount of sugar or

*a'* Allow the fruit to cook in water sufficient to keep the pulp from sticking to bottom of saucepan or burning.

*b'* Strain the pulp through jelly bag, measure the juice, and add sugar in the proportion of  $\frac{3}{4}$  as much sugar as juice.

NOTE: The less juicy fruits need to have water added when first cooking.

### 8. Fruit juices

*a.* Proceed as for jelly until the fruit juice is extracted. Turn into sterile bottles, seal air-tight immediately.

NOTE: Sugar may be added and sirup boiled 2 minutes before sealing.

2 tbsp. sugar

1 qt. fruit sirup

## General Directions for Canning and Preserving

Fruit should be fresh, firm, and not over-sized.

Sterilize jars by washing thoroughly, then placing in a pan of cold water and heating gradually to the boiling point. Remove from water as needed and turn upside down to drain before filling with fruit.

Do not dry inside of jars before filling.

Sterilize rubbers by dipping in boiling water. New rubbers must be used each year.

When cans are filled and sealed, turn upside down and let stand for a short time to be sure they are air-tight. If not, sirup will run out.

If necessary to change fruit from one can to another, always re-heat mixture.

When preparing jellies, jams, or marmalades, sterilize jars as in canning but let dry before filling.

Always seal jellies, jams, and marmalades with paraffin when mixture is cold and cover paraffin with tin to protect from mice.

When boiling any fruit or sirup, never allow it to boil vigorously. Always boil it gently that sirup may be clear.

NOTE: Paraffin may be washed, dried, and used again after being removed from top of jar.

**Canned Peaches I***Ingredients:*

1 c. sugar

1 qt. peaches

1 c. water

*Method:*

Prepare sirup by boiling sugar and water 5 minutes. Wipe peaches and put in boiling water long enough to easily loosen skins. Remove skins with silver knife. Cut in halves, if large, and remove stones; if small, may be left whole. Pack carefully in sterilized jars, but do not crush. Fill can with sirup, adjust covers loosely, and put in a rack in a covered pan with water up to the neck of the jars. Steam 20 minutes, or until soft. Remove jars, and fill to overflowing with sirup or boiling water and adjust rubbers and tops quickly.

One or two stones may be left in each jar for flavor.

**Canned Peaches II***Method:*

Weigh fruit after peeling. Allow  $\frac{1}{3}$  its weight in sugar and  $2\frac{1}{2}$  or 3 c. water to each pound of sugar. Make a sirup of sugar and water by boiling fifteen minutes and cook fruit in it — a small quantity at a time. Fill jars with fruit and sirup, letting the sirup overflow. Put on sterilized rubbers, adjust covers, and seal.

**Canned Tomatoes***Method I:*

Wipe tomatoes, cover with boiling water, and let stand until skins may be easily removed, but not long enough to allow the fruit to become soft. Remove skins, cut fruit in pieces, and cook without adding water until thoroughly scalded, skimming often during the cooking. Fill sterilized jars with tomatoes and liquid, adjust rubbers and covers, and seal at once.

*Method II:*

Sterilize jars. Wash tomatoes and plunge into boiling water to loosen skins.

Place tomatoes in jars, adding 1 tsp. salt to 1 qt. of the fruit. Adjust covers without rubbers, place on a rack with enough water to

come to neck of jars. Bring to boiling point and boil for 20-30 minutes. Remove jars, fill to overflowing with hot stewed tomatoes or boiling water,<sup>1</sup> adjust rubbers and covers, and seal. Be careful to have no seeds under the rubbers.

### Grape Juice I

#### *Ingredients:*

10 lbs. grapes (Concord)                      2 qts. water  
2 lbs. sugar

#### *Method:*

Wash the grapes and cook them in water until the skins are soft. Strain the pulp and liquid through a wet jelly bag. Reheat the juice and add the sugar and allow sirup to boil two minutes. Turn into hot sterile bottles, cork, and seal with paraffin or equal parts of shoemakers' wax and resin.

### Grape Juice II

#### *Ingredients:*

8 lbs. grapes (Niagara)                      1 qt. water  
 $\frac{1}{2}$  lb. sugar

#### *Method:*

Wash the grapes and cook in one quart of water until the skins are soft. Strain the pulp and juice through a wet jelly bag. Add the sugar and boil the juice two minutes. Turn into hot sterile jars, cork, and seal.

### Raspberry Vinegar

#### *Ingredients:*

3 pts. raspberries                              1 pt. cider vinegar  
1 pt. juice to 1 lb. sugar

#### *Method:*

Prepare the berries, cover with the vinegar, and allow them to stand overnight. Strain fruit and liquid through a wet jelly bag and boil the sirup fifteen minutes. Add the sugar and boil five minutes. Turn into hot sterile bottles, cork, and seal.

<sup>1</sup> Addition of water is permissible only when canning for home use. Under the regulations for the enforcement of the National Food and Drugs Act commercial canned tomatoes must not contain added water.

**Jelly**

See general directions.

**Jams, Preserves, Marmalade**

See general directions.

**Grapefruit Marmalade***Ingredients:*

2 oranges	2 lemons
2 grapefruit	sugar
	water

*Method:*

Scrub the fruit with a brush thoroughly. Remove the peel and cook the grapefruit rind in several waters until the inside white is soft. Remove this with a spoon. Slice the rinds of all three fruits in very fine shreds. Slice the fruit pulp in thin slices, removing all seeds, as these give a bitter taste to the marmalade. Weigh the pulp and sliced rinds. Calculate the sugar according to general directions. Cook the pulp in a large quantity of water until the rinds have become almost clear. This may be done by continuous boiling or by boiling on consecutive days, but will probably take three hours. Measure the liquid and add more water to bring it up to the amount required for the sugar to be used (see general directions). Add the sugar and allow sirup and pulp to boil gently until mixture will jelly slightly. Turn into sterile jars, cool, seal with hot paraffin, cover with tin covers.

NOTE: The sugar must be added last as long boiling reduces the sweetness and changes the color to a caramel brown. Why?

**Yellow Tomato Marmalade***Ingredients:*

7 lbs. ripe yellow tomatoes	5 lbs. granulated sugar
	7 lemons

*Method:*

Weigh tomatoes after peeling. Slice yellow skins of lemon in thin pieces. Discard white skin and cut pulp in small pieces. Boil until the sirup is thick and jellylike.

**Spiced Grapes***Ingredients :*

6 lbs. grapes

1½ c. vinegar

3 lbs. sugar

¼ c. mixed spice

{	cinnamon
	cloves
	allspice

*Method :*

Wash grapes and remove from stems. Put pulp into saucepan (save the skins). Cook pulp until seeds can be removed. Turn into colander and press pulp through, add skins and other ingredients and cook until skins are soft and mixture thick and jellylike.

**Gingered Pears I***Ingredients :*

4 lbs. pears cut in thin slices

3 lbs. sugar

2 lemons

⅛ lb. green ginger root

1 qt. water

*Method :*

Cook pears, lemons cut in fine slices, and chopped ginger root until the fruit is almost transparent. Add the sugar and boil gently until the sirup jellies and fruit is clear and transparent.

**Gingered Pears II.***Ingredients :*

8 lbs. pears (Seckel)

¼ lb. crystallized ginger

4 lbs. sugar

3 lemons

*Method :*

Wash, core, and slice the pears in thick pieces. Add the sugar and crystallized ginger cut in small pieces. Allow the mixture to stand 24 hours. Add lemon, sliced very thin, and cook mixture until sirup is thick and jellylike. Serve with ice cream.



**Rhubarb Conserve I***Ingredients:*

5 lbs. rhubarb	4 lbs. sugar
4 oranges	3 qts. water

*Method:*

Wash and cut the rhubarb into one-half inch pieces. Scrub the oranges, slice through the rind into very thin sections, being careful to remove all seeds. Cook the rhubarb and sliced orange together for 15 minutes, adding a very little water if necessary to prevent the fruit from burning.

Add the 3 qts. water and 4 lbs. sugar and allow the mixture to boil gently until sirup is thick and jellylike.

**Rhubarb Conserve II***Ingredients:*

4 lbs. rhubarb	1 lemon
1 lb. raisins	2 oranges
4 lbs. sugar	

*Method:*

Wash and cut rhubarb into one-half inch pieces. Boil rhubarb, raisins, and sugar gently 20 minutes, add juice of oranges and lemon and the rind of the orange. Boil until sirup is thick and jellylike.

**Apricot Conserve***Ingredients:*

1 lb. dried apricots	3 pineapples
1½ qts. water	1 c. Sultana raisins
sugar	1 c. water

*Method:*

Wash the apricots and soak them in cold water overnight. Using this same water, cook them until soft. Press pulp through a colander. Shred the pineapple and cook in a small quantity of water until soft. Combine the cooked fruits and raisins. Weigh and add half as much sugar. Add 1 c. water and cook until sirup is thick and jellylike.

**Pineapple and Cherry Preserves***Ingredients:*

1 lb. pineapple	1 $\frac{1}{4}$ lb. sugar
$\frac{1}{4}$ lb. white cherries	1 c. water

*Method:*

Cut the pineapple in thin slices. Wash and stone the cherries and add the pineapple. Add the sugar and cook until mixture is thick and sirup is jellylike.

**Grape Conserve***Ingredients:*

9 lbs. grapes	$\frac{1}{2}$ lb. walnuts
1 lb. raisins	4 lbs. sugar

*Method:*

Boil skins until tender. Heat pulp until seeds can be easily removed. Add raisins to skins and pulp and boil until consistency of marmalade. Add nuts five minutes before removing from fire.

**Plum Conserve***Ingredients:*

3 lbs. pitted plums	1 lb. walnuts
1 lb. raisins	3 oranges
	3 lbs. sugar

*Method:*

Wash and cut plums in pieces. Add chopped raisins, and oranges, and boil until the consistency of marmalade. Add nuts five minutes before removing from fire.

**Cherry Conserve***Ingredients:*

2 qts. currants	1 qt. sour cherries
2 qts. red raspberries	$\frac{1}{4}$ lb. walnut meats
	2 qts. sugar

*Method:*

Stem the currants, pit cherries, and boil all ingredients except nuts until consistency of marmalade. Add nuts five minutes before removing from fire.

**Mustard Pickle***Ingredients:*

1 qt. cucumbers sliced	$\frac{1}{2}$ c. salt
1 qt. small cucumbers	2 qts. vinegar
1 qt. small onions	3 c. brown sugar
2 heads cauliflower	1 c. flour
1 green pepper	2 tbsp. mustard
	2 tbsp. turmeric

*Method:*

Cover the vegetables with salted water and let stand overnight. In the morning, cook in the same water until tender, then drain. Make a paste by cooking together the other ingredients, then add the drained vegetables. When sufficiently thick, put in wide-mouthed sterilized jars or bottles.

**Chili Sauce***Ingredients:*

12 ripe tomatoes	2 c. vinegar
1 pepper, finely chopped	3 tbsp. sugar
1 onion	1 tbsp. salt
2 tsp. each, cloves, cinnamon, allspice.	

*Method:*

Cook  $\frac{2}{3}$  hour or until mixture is reduced  $\frac{1}{3}$ .

**Sweet Pickle***Ingredients:*

7 lbs. fruit	1 qt. vinegar
$3\frac{1}{2}$ lbs. sugar	2 oz. cloves
	2 oz. cinnamon

*Method:*

Make a sirup and cook fruit in it until soft. Remove the fruit with a perforated spoon. Boil down the sirup and pour over the fruit in stone or glass jars.

NOTE: Crabapples, peaches, pears, or Seckel pears may be used.

**Pickled Tomatoes***Ingredients:*

1 pk. green tomatoes	2½ qts. vinegar
1 c. salt	2 lbs. brown sugar
2 qts. vinegar	¼ lb. white mustard seed
1 qt. water	
2 tbsps. each of cloves, cinnamon, ginger, black pepper.	

*Method:*

Cut the tomatoes in one-fourth inch slices, and let stand overnight with one cup of salt. In the morning, drain and add two quarts of vinegar and one quart of water. Boil fifteen minutes, then drain.

Take two and one half quarts of vinegar, brown sugar, mustard seed, and spices. Boil tomatoes in this fifteen minutes. Then turn all into a stone jar.

**Cucumber Pickle***Ingredients:*

100 medium cucumbers	½ c. black mustard seed
1 qt. onions	½ c. white mustard seed
	1 c. olive oil

*Method:*

Wash, peel, and slice the vegetables. Cover with brine (1 c. salt and 4 qts. boiling water), let stand 2 hours and drain.

Mix oil and mustard seed and cover with hot vinegar. Add to the vegetables. Seal in sterilized cans.

**Red Pepper Pickle***Ingredients:*

½ pk. red peppers	1 qt. vinegar
boiling water	2 c. sugar

*Method:*

Wash peppers, remove seeds, and shred. Cover with boiling water for 5 minutes. Drain, pack in sterilized jars, and cover with a sirup made of the vinegar and sugar.

## SCORE CARD

## Canned Fruits

<i>General appearance</i>	. . . . .	15
Container	(5)	
Color	(10)	
<i>Fruit</i>	. . . . .	50
Whole	(5)	
Cooked	(20)	
Flavor	(25)	
<i>Sirup</i>	. . . . .	35
Clearness	(10)	
Flavor	(15)	
Density	(10)	
		<hr/> 100

## Preserves

<i>General appearance</i>	. . . . .	30
Container	(10)	
Color	(20)	
<i>Mixture</i>	. . . . .	70
Consistency	(15)	
Flavor	(40)	
Density	(15)	
		<hr/> 100

## REFERENCES

*Canning and Preserving*

- ADAMS and SANDSTER. Practical Directions for Preserving Native Fruits and Vegetables. University of Wisconsin, Agricultural Experiment Station, Bulletin No. 136 (1906).
- BITTING. The Canning of Foods. United States Department of Agriculture, Bureau of Chemistry, Bulletin No. 151 (1912).
- BREAZEALE. Canning of Vegetables in the Home. United States Department of Agriculture, Farmers' Bulletin, 359 (1910).
- BUCHANAN. Household Bacteriology.

- CORBETT. Canned Foods, Fruits, and Vegetables. Teachers College Bulletin, Fourth Series No. 12, February 15, 1913.
- GOLDTHWAITE. Principles of Jelly Making. University of Illinois, Bulletin No. 34 (1912).
- GOLDTHWAITE. Chemistry and Physics of Jelly-making. Journal of Industrial and Engineering Chemistry, vol. 1, pages 333-340; vol. 2, pages 457-462 (1909-1910).
- GOULD and RETCHER. Canning Peaches on the Farm. United States Department of Agriculture, Farmers' Bulletin, No. 426 (1910).
- HATTON and HOLT. Canning of Fruits and Vegetables. Georgia State College of Agriculture, Bulletin No. 11.
- HAUSMANN. Home Manufacture and Use of Unfermented Grape Juice. United States Department of Agriculture, Farmers' Bulletin, No. 175 (1903).
- KINNE and COOLEY. Foods and Household Management.
- LEACH. Food Inspection and Analysis.
- NYE and AUSTIN. A Canning Business for the Farm Home. Cornell University Bulletin, vol. 2, No. 47.
- PARLOA. Canned Fruit, Preserves, and Jellies. United States Department of Agriculture, Farmers' Bulletin, 203 (1905).
- ROSE. The Preservation of Food in the Home. Cornell University Bulletin, vol. 1, No. 17.
- SHERMAN. Food Products.
- WILEY. Foods and their Adulteration.

## CHAPTER IV

### CEREALS

CEREALS and the various products made from grains form one of the most important foods for man. For the majority of people they furnish more nutriment than does any other class of food materials. Cereals have been defined as grasses,<sup>1</sup> the grains of which are used for food. There are on the market many cereal preparations, cooked or uncooked, but these are made from a limited number of cereal grains and the properties of each preparation are dependent upon those of the cereal from which it is derived.

A cereal grain is a kernel<sup>2</sup> containing a relatively small germ rich in protein and fat, and a relatively large endosperm containing much starch, little fat, and a moderate amount of protein, the whole inclosed in a fibrous covering called the bran. The bran consists of several layers, the outermost being of little food value, while the "aleurone layer" (which lies between the fibrous covering and the starchy interior but is apt to be rejected with the bran in ordinary milling processes) is rich in protein and in phosphorus, calcium, and iron compounds of much value in nutrition. A "whole grain" product is therefore a more complete food than the "finer" product made from the endosperm only, but the latter (largely because it is poor in protein, fat, and ash constituents) is apt to keep longer than the former.

<sup>1</sup> Since a few of the edible grains, such as buckwheat, are seeds of plants not belonging to the grass family, the term "grains" is somewhat broader than "cereals."

<sup>2</sup> See Sherman's *Food Products*, pages 270-272, for description and illustrations of the structure of the wheat kernel.

The percentage composition of the different grains and of the various products manufactured from them may be found in Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture, or in Sherman's *Food Products*, Chapter VIII.

**How to purchase cereals:** Cereals do not keep well after being opened, as parasites are apt to appear. Therefore, purchase a small stock at a time. Cereals in bulk are cheaper, but not always as clean as those sold in packages. Grocers should be encouraged to keep bulk cereals in bins or other containers which are dust-proof and insect-proof.

**Reasons for cooking cereals:**

1. Softens the cellulose.
2. Bursts the starch grains.
3. Increases the palatability.

**Methods of cooking:**

Boiling in water or milk; example, rice.  
 Steaming in water or milk; example, corn meal.  
 Heat in the oven; example, corn flakes.  
 Toast; example, shredded wheat.

**Methods of serving:**

Hot. Cold.  
 Puddings. Thickening for croquettes.  
 Fritters. Browned Slices.

**Variations in serving:**

Cream and sugar. Cream.  
 Butter and sugar. Butter.  
 Prune sauce. Apple sauce or sirup.  
 Maple sugar. Corn sirup.  
 Fresh fruit. Dried fruit.  
 Creamed beef. Pudding sauce.

**Differences in consistency:**

Breakfast cereal. Mush.  
 Porridge. Gruel.  
 Cereal water.



## EXPERIMENTS

49. — Make the following tests with iodine. See page 13.

$\frac{1}{2}$  tsp. dry cornstarch

$\frac{1}{2}$  tsp. moist cornstarch

$\frac{1}{2}$  tsp. cooked cornstarch

Observe change in color of iodine.

50. — Make the same test with iodine, using the following cereals, cooked, moist, raw :

rice

cream of wheat

corn meal

wheat flour

shredded wheat

force

51. — Wash a little rice and test the water with iodine. See page 13. Result? Why do you observe a change?

52. — Collect a little saliva in test tubes. Add to this small amounts of the cooked and uncooked cereal, let stand in warm water ten minutes. Test part with iodine and part with Fehling-Benedict solution (page 13). Conclusion?

53. — We have shown that starch is present in large quantities ; we will now compare the thickening qualities of the following cereals :

corn meal

rolled oats

cream of wheat

rice

Use  $\frac{1}{4}$  c. each of the above cereals. Mix each in saucepans of uniform size and shape with :

a. 1 c. cold water. Bring to boiling point and boil 15 minutes.

b. 1 c. boiling water. Boil 15 minutes.

c. In each case how much water must be added to prevent burning and to reduce to the consistency of breakfast cereal?

d. What individual variations in the thoroughness of cooking appear at the end of the 15 minutes?

e. Is it best to start cereals cooking in boiling or cold water?

f. Make a table of the amount of water required with each of the cereals used. Reduce it in each case by  $\frac{1}{4}$  and again cook  $\frac{1}{4}$  c. of the cereals, this time using a double boiler.

g. Why was the amount of water reduced?  
 h. Compare the products when saucepan and double boiler are used.

i. What advantages has the double boiler?

54. — When should salt be added to the cereal?

a. Measure two portions of rice, A and B,  $\frac{1}{4}$  c. in each portion.

b. Steam A in double boiler, adding salt to the rice as usual.

c. Steam B in double boiler, salting rice as in A, but also adding rock salt to the water in lower part, in the proportion of 2 tbsps. to 1 c. water. Note the temperature of the water in lower part of double boiler in each case.

d. Compare the length of time required for the cooking of the rice in each case. How do you explain the difference?

55. — a. Steam the following cereals, using milk as compared with water for the liquid:

milk	water
cream of wheat	cream of wheat
oatmeal	oatmeal
corn meal	corn meal
rice	rice

b. Compare as to taste, color. What possible objection could be raised to the long cooking of milk when used as a liquid with cereals? Is it a vital objection?

56. — a. Use  $\frac{1}{2}$  c. rolled oats plus the requisite amount of water for breakfast cereal as decided upon in Expt. 53 f.

Cook  $\frac{1}{2}$  the amount of oatmeal and water in the fireless cooker.

Cook the other half in the pressure cooker.

b. Note the length of time required in each case to cook the cereal.

Explain the differences in length of time.

c. What is the consistency of the cereal? Why?

57. — Reduce the amount of water by  $\frac{1}{4}$  and cook the cereal in both pressure and fireless cooker. Note the consistency of this mixture.

58. — Repeat until the proper amount of water per unit of cereal is determined for each cooker.

59. — Determine the proper amount of water to be used per unit of :

corn meal	rice
cream of wheat	malt

60. — Compute the economy in time, fuel, and labor when the pressure and fireless cookers are used.

61. — Compute the length of time in which each cooker would pay for itself in the cost of fuel saved.

Compare the results obtained in the above experiments with the corresponding data in the following tabular summary and discuss any points which may not seem to agree.

THE COOKING OF CEREALS (TABULAR SUMMARY)

CEREAL	AMOUNT OF WATER	SALT	TIME
1 c. rolled oats . . . . .	3 c.	1 tsp.	30-60 minutes
1 c. coarse oatmeal . . . . .	4 c.	1 tsp.	3 hours or more
1 c. granular cereals (except corn meal)	4-6 c.	1 tsp.	30-60 minutes
1 c. corn meal . . . . .	6 c.	1 tsp.	60 minutes
1 c. rice — boiled . . . . .	8 c.	1 tsp.	20-30 minutes
1 c. rice — steamed . . . . .	2 c.	1 tsp.	1 hour or more

**General rules.** Remove any foreign substances from cereal. A fireless cooker is efficient, but a double boiler is the best utensil for cooking cereals. Fill lower part  $\frac{1}{3}$  full of boiling water. It must be kept rapidly boiling while cereal is cooking. If more water is needed before the cooking is completed, boiling water should be used.

Add cereal slowly to rapidly boiling salted water in upper part of double boiler and stir constantly until it thickens, cooking directly over the fire. Place over boiling water to finish cooking. Rice should be washed before cooking.

## COMBINATIONS OF CEREALS AND FRUITS

**Apples in Sirup with Rice I***Ingredients:*

1 c. boiling water	stick cinnamon
1 c. sugar	apples

*Method:*

Boil sugar, cinnamon, and water together three minutes.

Wash apples, core, pare, and quarter and boil in the sirup until tender. Remove apples from sirup as soon as transparent and continue boiling until a medium-thick sirup is formed. Arrange apples attractively around a mound or mold of cereal and pour sirup over all.

**Apples in Sirup with Rice II***Method:*

Steam rice in individual molds. Turn out and surround with stewed apples cut in eighths. Uncooked fruits, as oranges, bananas, or strawberries, may be used.

**Apples in Sirup with Oatmeal***Method:*

Stew pared, cored apples and fill cavities with cooked oatmeal mixed with chopped dates. Pour sirup over apples and serve with whipped cream. This may be served for breakfast or as a simple dessert for luncheon.

**Oatmeal with Dates***Ingredients:*

$\frac{1}{2}$ c. oatmeal	$\frac{1}{4}$ lb. dates
$\frac{1}{4}$ tsp. salt	1 $\frac{1}{2}$ c. water

*Method I:*

Prepare oatmeal as usual. When half cooked, add dates, washed, stoned, and cut in halves; or when oatmeal is cooked, add dates finely chopped.

*Method II:*

Wash, stone, and cut dates in quarters lengthwise. Using a custard cup prepare a mold by first dipping in cold water. Press pieces of dates against sides of cup, radiating from center like petals. Carefully turn in cereal and cool. Serve with cream.

NOTE: Cream of wheat, wheatena, and farina may be used with dates. Raisins, figs, or prunes may be substituted for dates.

## FARINACEOUS DESSERTS

## Apple Tapioca

*Ingredients:*

$\frac{3}{4}$  c. pearl or minute tapioca

cold water

$3\frac{1}{2}$  c. boiling water

$\frac{1}{2}$  tsp. salt

7 sour apples { Fresh or canned  
peaches or  
other fruits  
may be used.

$\frac{1}{2}$  c. sugar

*Method:*

Soak tapioca one hour in cold water to cover, drain, add boiling water and salt; cook in double boiler until transparent. Core and pare apples, arrange in buttered pudding dish, fill cavities with sugar, pour over tapioca and bake in moderate oven until apples are soft. Serve with sugar and cream. Do not soak minute tapioca.

## Cornstarch Pudding

*Ingredients:*

1 pt. milk scalded

4 tbsp. cornstarch

4 tbsp. sugar

$\frac{1}{4}$  tsp. salt

$\frac{1}{4}$  c. cold milk

$\frac{1}{2}$  tsp. vanilla

*Method:**Plain*

Make paste of cornstarch, salt, sugar, and cold milk. Add to scalded milk slowly, stirring constantly. Stir until smooth, then cover and cook 45 minutes in double boiler. Add vanilla and pour

into molds previously wet with cold water. Serve cold with cream and sugar.

### *Chocolate*

Melt chocolate. Add scalded milk gradually. Finish as in plain pudding. If eggs are used, beat and add the cornstarch mixture slowly to them. Return to double boiler and cook 3 minutes, stirring constantly.

### *Additions*

whites 2 eggs, or                      yolks 2 eggs, or  
2 squares chocolate

Use 1 tbsp. cornstarch to 1 c. milk for soft pudding.

Use 2 tbsp. cornstarch to 1 c. milk to mold.

## **Baked Indian Pudding**

### *Ingredients :*

1 qt. milk	$\frac{3}{4}$ c. corn meal
$\frac{1}{2}$ tbsp. ginger	$\frac{1}{2}$ c. molasses
1 egg	1 tbsp. butter
	$\frac{1}{2}$ tsp. salt

### *Method :*

Scald the milk and add the molasses and butter. Mix the corn meal, ginger, and salt and pour the liquid over dry ingredients. Beat in the egg and pour the mixture into a buttered baking dish. Bake two hours in a moderate oven.

## **Coffee Sago Pudding**

### *Ingredients :*

2 c. boiled coffee	$\frac{1}{4}$ c. sugar
$\frac{1}{4}$ c. sago	$\frac{1}{8}$ tsp. salt

### *Method :*

Wash sago in cold water; add coffee and cook in double boiler until sago is transparent. Add sugar and salt. Serve with cream and sugar or soft custard. Coffee Sago may be served hot or cold.

**Orange Pudding***Ingredients :*

2 tbsp. cornstarch	2 c. boiling water
1 c. sugar	1 tbsp. butter
$\frac{1}{2}$ tsp. salt	juice of 1 lemon
3 oranges	

*Method :*

Prepare cornstarch pudding and pour over sliced oranges.

**Rice Pudding***Ingredients :*

1 qt. milk	$\frac{1}{2}$ tsp. salt
$\frac{1}{3}$ c. rice	$\frac{1}{3}$ c. sugar
1 tsp. vanilla	$\frac{1}{2}$ c. raisins

*Method :*

Wash rice, place in a buttered pan, add other ingredients except raisins. Bake slowly several hours, stirring occasionally. Add raisins when done.

**Shredded Wheat Pudding***Ingredients :*

2 c. hot milk	$\frac{1}{3}$ c. molasses
1 shredded wheat biscuit	$\frac{1}{2}$ tsp. salt
1 egg	$\frac{1}{2}$ tsp. cinnamon

*Method :*

Combine ingredients and bake in a moderate oven until firm. Serve with cream.

**GRUELS**

Gruels are liquid preparations of finely ground grain products. Long cooking in a double boiler is necessary to make the starch soluble or to partly dextrinize it.

**Arrowroot Gruel***Ingredients:*

2 tsp. arrowroot	1 c. boiling water or milk
2 tbsp. cold water	salt

*Method:* (for all, same as given for cereals on page 51).

**Barley Gruel***Ingredients:*

1 tbsp. barley flour	1 c. scalded milk
2 tbsp. cold water	salt

**Corn Meal Gruel***Ingredients:*

1 tbsp. corn meal	1 $\frac{1}{4}$ c. boiling water
2 tbsp. cold water	salt

**Oatmeal Gruel***Ingredients:*

$\frac{1}{4}$ c. coarse oatmeal	1 $\frac{1}{2}$ c. boiling water
$\frac{1}{2}$ tsp. salt	milk to thin it to right consistency

**REFERENCES***Grain Products*

- BIRDSEYE. Rice and Rice Cookery. Cornell University Bulletin, vol. 3, January 1, 1914.
- Cereal Foods. Maine Agricultural Experiment Station, Bulletin 118 (1905).
- Cereals and How to Cook Them. The University of Nebraska, Home Studies Series No. 2.
- Cereals and Other Starchy Foods, Demonstration. Iowa State College of Agriculture. Extension department, Short course class notes no. 5.
- DAY, EDNA. Digestibility of Starch of Different Sorts as Affected by Cooking. United States Department of Agriculture, Farmers' Bulletin, 202 (1908).



- FOULK, ELMA. Ohio State University. The Agricultural College, Home Makers Reading Course No. 2.
- HUNT. The Cereals in America.
- LANGWORTHY and HUNT. Corn Meal as a Food and Ways of Using it. United States Department of Agriculture, Farmers' Bulletin, 565 (1914).
- LANGWORTHY and HUNT. Use of Corn, Kafir and Cow Peas in the Home. United States Department of Agriculture, Farmers' Bulletin, 559 (1913).
- LEACH. Food Inspection and Analysis.
- MERRILL. Indian Corn as Food for Man. Maine Agricultural Experiment Station, Bulletin 131 (1906).
- PATTEE. Practical Dietetics with Reference to Diet in Disease.
- SHERMAN. Food Products.
- WILEY. Cereals and Cereal Products. Part 9 of Bulletin 13 of the Bureau of Chemistry, United States Department of Agriculture.
- WOODS and SNYDER. Cereal Breakfast Foods. United States Department of Agriculture, Farmers' Bulletin, 249 (1911).
- WOODS. Food Value of Corn and Corn Products. United States Department of Agriculture, Farmers' Bulletin, 298 (1907).

## CHAPTER V

### VEGETABLES AND VEGETABLE SOUPS

VEGETABLES cover a class of foods some of which are fruits, some roots, leaves, stalks, seeds, bulbs, and tubers. A classification of vegetables is given below. Like the fruits, the vegetables vary greatly in their general composition. Some, like the legumes, are characterized by high protein content; others, including the roots and tubers, by high carbohydrate content; still others, including most of the leaves, stalks, and bulbs, by high cellulose and water content. All vegetables, however, are rich in one or more of the ash constituents such as iron, calcium, and phosphorus, which are now known to play an important part in nutrition. (See Sherman's *Food Products*, pages 324-329, for percentage composition, and pages 347-349 for percentage of ash in the edible portion.)

#### Classification :

- a. According to the part of the plant used for food.
- b. Character of juice — sweet, strong.
- c. Character of plant — starchy, watery.
- d. Fresh, dried, canned.

#### a. Part of the plant :

*Leaves* — lettuce, water cress, spinach, cabbage, dandelion, kale, Swiss chard, beet tops, turnip tops.

*Stalks* — asparagus, celery, rhubarb.

*Bulbs* — onion, — Bermuda, Spanish, Egyptian; garlic, leek, shallot, chives.

*Seaweeds* — Irish moss, agar or Ceylon moss.

*Tubers* — potatoes, Jerusalem artichokes, dasheen corms.

*Tuberous roots* — sweet potatoes, yams, cassava, arrowroot.

*Succulent roots* — turnips, beets, kohl-rabi, radishes, carrots, parsnips, oyster plant.

*Flowers* — cauliflower, French artichoke.

*Fruits* — tomatoes, cucumber, squash, pumpkins, okra, corn, peppers, eggplant.

*Seeds* — peas, beans, lentils.

**b. Character of juice :**

<i>sweet</i>	<i>strong</i>
celery	onions
carrots	cabbage
beets	turnips

**c. Character of plant :**

<i>starchy</i>	<i>watery</i>
potatoes	cabbage
parsnips	tomatoes
	cucumbers

**Points to emphasize.** Select medium-sized vegetables and wash carefully. Soak cauliflower in salt water before cooking. Soak wilted vegetables in cold water. Cook summer vegetables as soon after gathering as possible. If necessary to keep, place in refrigerator or in a cool cellar. Keep winter vegetables in barrels or bins in a dry, cold place. Empty canned vegetables as soon as opened, and let stand exposed to the air a few minutes to become aerated. Vegetables lack fat in any quantity, therefore it is well to combine them with butter, oil, or cream. It saves time to cook a double portion of a vegetable and reheat the next day in another form.

**Reasons for cooking vegetables :**

To sterilize any from doubtful sources.

To soften cellulose.

To make starch more easily digestible.

To develop or modify flavors.

To give a variety of attractive ways of serving.

**Ways of serving vegetables:**

Boiled with butter	Mashed
Creamed	Puddings (Irish moss)
Croquettes	Salads
Scalloped with cheese	Soufflés
Fritters	Soups

**General rules for cooking.** Wash thoroughly, pare or scrape if skins must be removed. Let stand in cold water until cooked to keep crisp and prevent discoloration. Pare onions under cold water to absorb the odor. Cut tops of beets 1 inch from beet. Use one tsp. salt to 1 qt. boiling water. Add salt when vegetables are half cooked. The water in which vegetables are cooked is called vegetable stock and may be used with milk in the preparation of white sauce for vegetables with sweet juice. Cook strong-juiced vegetables uncovered in a large amount of water, sweet-juiced covered in a small amount of water. The color may be kept in green vegetables by pouring cold water through them after draining. Drain vegetables as soon as tender. Cold vegetables may be used in salads, combined with white sauce as "creamed vegetables," or white sauce and buttered crumbs as "scalloped vegetables."

**EXPERIMENTS****Potato**

**62.** — Prepare two *very* thin slices of white potato, one lengthwise and one across.

Hold against a strong light.

Observe markings and lines. What are they?

Make a drawing.

See Sherman's *Food Products*, pages 320-321, 322.

**63.** — Do the same with carrot, turnip, and onion.

Compare and state conclusions.

**64.** — Wash, pare, and grate into a bowl a good-sized white potato.

Make a microscopic examination of a particle of the pulp in a drop of water, before and after treatment with a drop of dilute iodine solution. See page 13.

**65.** — Pour pulp and fluid from Expt. **64** into a *wet* cheesecloth over a bowl of cold water.

Draw the cloth together and knead the mass in the water.

To what is the milky color of the water due?

Test a little of the water with iodine.

Boil a little.

What changes do you observe? Explain.

**66.** — Change the water and continue washing the pulp from Expts. **64** and **65** until the water is only slightly milky or clear. Save each water.

Open cheesecloth and examine content.

What does this explain as to the structure of the potato?

What does this explain as to the cooking of potato and other starchy vegetables?

**67.** — Observe the water and starch which has been standing.

Decant off the water and turn sediment on to a filter paper to dry.

Note the clear white color of the sediment. Note the brown color of liquid. To what is this due? (See experiments with Apple.)

**68.** — Add fresh cold water to a portion of the sediment obtained in Expt. **67**; stir until particles are all suspended. Dip in a piece of white muslin and iron while still wet. When have you observed this same result?

**69.** — Add freshly boiling water to the sediment in one bowl. Stir the mixture constantly.

How does this compare with Expt. **68**?

Dip a piece of muslin in, allow it to dry, sprinkle, and iron.

**70.** — Repeat Expts. **68** and **69**, using carrot and turnip.

Compare and state conclusions.

### Dextrinized Starch

**71.** — *a.* Dextrinize one tbsp. flour by heating the flour in a dry utensil.

*b.* Test with iodine. (See page 13.)

*c.* Add water to make a solution.

*d.* Does the color turn?

*e.* Why not?

*f.* Does the dextrin appear to be more or less soluble than flour or starch in cold water?

*g.* Explain your answer.

**72.** — *a.* Thicken  $\frac{1}{2}$  c. cold water with 1 tbsp. flour.

*b.* Thicken  $\frac{1}{2}$  c. cold water with 1 tbsp. dextrinized flour (boil each).

*c.* Which mixture is thickest? Why?

### Starchy Vegetables

Vegetables may be prepared for cooking processes by peeling or scraping. Peeling is more often done carelessly than carefully. Have ready the following vegetables:

white potato

carrot

sweet potato

turnip

parsnip

**73.** — Wash, scrub with a brush, and weigh each vegetable.

Estimate the waste in the preparation of each vegetable by the following methods:

*a.* scraping

*b.* peeling carefully

*c.* peeling in the usual manner

Which method is the more economical?

### Cooking of Vegetables

**74.** — Have washed and scrubbed the following vegetables:

*a.* white potato

*b.* sweet potato

*c.* carrot

Prepare each by:

*a.* peeling

*b.* scraping

*c.* scrubbing, but not removing skin

*a.* Boil each vegetable, prepared in the three ways.

*b.* Note the length of time of cooking.

- c.* Compare as to color, texture, and flavor.
- d.* Note the length of time and ease in removing the skin of the cooked vegetable as compared with peeling an uncooked vegetable.
- e.* Test the water in each case for starch, protein, sugar, and mineral matter. By which method of preparation is most food value lost? Why? What are your conclusions?

**75.** — Use the same kinds of vegetables prepared for cooking by peeling, scraping, and scrubbing.

Bake in a hot oven. Note the time of baking, appearance, texture, color, taste in each case.

Which method of preparation for baking vegetables is best? Why?

### Green Vegetables

Green vegetables are prepared for cooking or fresh for the table by washing in several waters to remove sand, parasites, etc.

**76.** — Wash the following vegetables :

lettuce	celery	spinach
green peas	string beans	onions
	cauliflower	

Arrange samples of each green vegetable as follows :

- a.* Soak in cold water 1 hour in room.
- b.* Soak in ice water 1 hour in refrigerator.
- c.* Soak in salted cold water (2 tsp. salt to 1 pt. water) 1 hour in room.
- d.* Soak in salted ice water (2 tsp. salt to 1 pt. ice water) 1 hour in refrigerator.
- e.* Soak in acid water  $\left\{ \begin{array}{l} 1 \text{ tsp. lemon juice} \\ 1 \text{ tsp. vinegar} \end{array} \right\}$  to 1 pt. ice water in refrigerator 1 hour.

Note the crispness in each case.

Is there any change in color or flavor?

**77.** — Boil samples of each vegetable in the following manner :

- a.* Large quantity of water. No cover.
- b.* Small amount of water. Cover tightly.
- c.* Small amount of water. No cover.

Compare the length of time of cooking in each case.

Contrast color, flavor, attractiveness.

Which method is best for each vegetable?

Why?

**78.** — Prepare spinach by cooking in double boiler, using no water in upper part. Enough moisture will be furnished by the water which clings to the spinach in washing and also the water in the plant.

Compare with that boiled in water.

**79.** — What nutrients are lost by cooking green vegetables in water?

Prove this by testing the water. The coöperation of the chemistry laboratory should be sought, and distilled water should be used in boiling the vegetables.

### Cookers

**80.** — *a.* Prepare several kinds of roots and tubers (*e.g.* potatoes, carrots, sweet potatoes, beets, turnips, parsnips) in both the fireless and the pressure cooker. Note the temperature used for each cooker.

*b.* Note the length of time required in each case to cook each vegetable and the amount of water necessary.

*c.* Contrast the amount of water used and explain the difference.

*d.* Compute the difference in labor, time, and fuel.

**81.** — Repeat Expt. **80**, using leafy vegetables (*e.g.* spinach, cabbage) and report results in the same way.

**82.** — Experiment similarly with onions, cauliflower, and other vegetables.

Summarize the evidence as to relative merits of the two methods for each kind of vegetable. Are there any vegetables for which either cooker would not be suitable?

### Buttered Beets

#### *Ingredients:*

6 beets (cooked)

2 tbsp. butter

2 tbsp. sugar

1 tbsp. vinegar



*Method :*

Prepare the cooked beets in  $\frac{1}{8}$  in. slices and place in baking dish. Melt the butter, add the sugar and vinegar and allow mixture to come to the boiling point. Pour the sirup over the beets and place baking dish in moderately hot oven for ten minutes.

**Glazed Carrots with Peas***Ingredients :*

$\frac{1}{2}$ c. butter	2 c. peas
$\frac{1}{2}$ tbsp. sugar	6 carrots

*Method :*

Prepare carrots, cut in strips and boil 15 minutes. Drain, return to saucepan, add butter and sugar, cover and cook slowly until tender. Add the cooked peas (canned may be used) and season.

**Corn Pudding***Ingredients :*

2 c. corn	1 tbsp. sugar
2 egg yolks	1 tbsp. butter
1 tbsp. flour	1 c. milk
$\frac{1}{2}$ tsp. salt	$\frac{1}{8}$ tsp. pepper
2 egg whites	

*Method :*

Melt the butter, add the sugar, flour, and milk. Let heat until mixture reaches boiling point. Add the slightly beaten egg yolks, then corn, salt and pepper. Fold in the stiffly beaten egg whites, pour into a buttered baking dish, and bake in a moderate oven 30-40 minutes. Serve at once.

**Buttered Cabbage***Ingredients :*

1 cabbage	2 tbsp. melted butter
salt	water

*Method :*

Separate the cabbage leaves, wash and place in boiling salted water. Boil until leaves are tender. Drain the water from the leaves, place them in serving dish and add melted butter. Serve hot.

**Cabbage with Ham***Ingredients:*

1 cabbage	$\frac{1}{4}$ lb. cooked ham
water	

*Method:*

Separate and wash the cabbage leaves. Place in boiling water, adding the cooked ham. Allow all to boil until cabbage is tender. Drain water from the leaves, arrange cabbage on serving dish, and garnish with ham.

NOTE: Bacon may be substituted for ham.

**Creamed Cabbage***Ingredients:*

1 cabbage	$\frac{1}{4}$ c. vinegar
2 egg yolks	$\frac{1}{4}$ c. water
$\frac{1}{2}$ tbsp. butter	1 c. cream

*Method:*

Separate the cabbage leaves, wash and cut them in thin pieces and cook in boiling salted water. Prepare a custard of the yolks of eggs, water, vinegar, and butter. Cook the mixture in a double boiler and as it thickens add the cream. When custard is thick, pour it over the cabbage in a serving dish. Serve hot.

**Stuffed Baked Potatoes***Ingredients:*

6 baked potatoes	3 tbsp. hot milk
2 tbsp. butter	$\frac{1}{2}$ tsp. salt
$\frac{1}{4}$ tsp. white pepper	

*Method:*

Cut the potatoes in halves, lengthwise; then without breaking the skin remove the inside. Mash with a fork, season, and return to shells, keeping it light and fluffy. Place on a pan in a hot oven until light brown.

**Potato Apples***Ingredients:*

2 c. hot riced potatoes	cayenne
2 tbsp. butter	grating of nutmeg
$\frac{1}{3}$ c. grated cheese	yolks 2 eggs or 1 whole egg

*Method:*

Mix ingredients in order given, and beat thoroughly. Shape in form of small apples, roll in flour, egg and crumbs, fry in deep fat. Insert a clove at stem and blossom end.

**Potato Puff***Ingredients:*

2 c. mashed potatoes	2 tbsp. melted butter
2 eggs	1 c. cream
	$\frac{1}{2}$ tsp. salt

*Method:*

Beat the potatoes, eggs, and cream until the mixture is smooth and light. Add the melted butter and salt. Pour mixture into a buttered baking dish and bake in a hot oven until it is well risen and brown.

**Potato Soufflé***Ingredients:*

4 large white potatoes	$\frac{1}{2}$ c. milk
1 tbsp. butter	$\frac{1}{4}$ tsp. pepper
4 egg whites	4 egg yolks
	1 tsp. salt

*Method:*

Boil and rice the potatoes. Add the milk, butter, salt, pepper, and yolks of eggs. Fold in the stiffly beaten whites of eggs and pour the mixture into a buttered baking dish. Bake in a moderate oven until the surface is browned.

**Sweet Potato Puff***Ingredients:*

6 sweet potatoes	2 tbsp. butter
whites 2 eggs	$\frac{1}{2}$ tsp. salt

*Method:*

Boil and mash the sweet potatoes. Add the butter, salt, and stiffly beaten whites of eggs. Pour the mixture into buttered custard cups placed in boiling water. Bake in a hot oven twenty minutes. Serve in the cups with a parsley garnish.

**Glazed Sweet Potato I***Ingredients:*

6 medium-sized potatoes	$\frac{1}{2}$ c. sugar
$\frac{1}{4}$ c. water	1 tbsp. butter

*Method:*

Wash and pare sweet potatoes. Cook ten minutes in boiling salted water. Drain, cut in halves lengthwise, and put in a buttered pan. Make a sirup of sugar, water; add butter. Brush potatoes with sirup and bake 15 minutes, basting twice with remaining sirup.

**Glazed Sweet Potato II***Ingredients:*

6 medium-sized boiled sweet potatoes	
$\frac{1}{4}$ c. butter	1 c. sugar
hot water	salt

*Method:*

Melt butter in a frying pan, add sugar and a little salt gradually to allow sugar to melt and form a brown sirup. Add enough hot water to reduce to a thin sirup. Cut potatoes in lengthwise slices, place in pan and heat over fire, basting constantly until they show a rich golden glaze. Serve at once.

**Browned Parsnips***Ingredients:*

cold, boiled parsnips	pepper
butter	salt

*Method:*

Cut parsnips in lengthwise slices. Place in butter until well browned. Sprinkle with salt and pepper.

**Stuffed Peppers***Ingredients:*

6 green peppers	3 tbsp. crumbs
1 onion	8 tbsp. chopped ham
2 tbsp. butter	salt
$\frac{1}{3}$ c. brown sauce	pepper

*Method:*

Cut a slice from stem end or cut peppers lengthwise. Remove all seeds and parboil 10 minutes. Do not leave in water. Cut onion in small pieces and brown in butter. Add sauce and bread crumbs. Sprinkle with pepper and salt. Fill peppers with mixture. Cover with buttered crumbs and bake 10 minutes in a hot oven.

**Winter Squash***Steamed:*

Cut squash in pieces, remove seeds and stringy portion, and pare. Steam until soft. Mash and season with butter, salt, and pepper.

*Baked:*

Cut in 2-inch pieces, remove seeds and stringy portion, place in a pan, cover and bake until soft in a slow oven. Mash and serve in the shell or remove from the shell, mash, and season.

**Squash Soufflé***Ingredients:*

2 c. hot steamed squash	$1\frac{1}{2}$ c. milk
1 tbsp. brown sugar	2 eggs
1 tsp. salt	$\frac{1}{4}$ tsp. pepper

*Method:*

Wash squash, add remaining ingredients, eggs beaten separately, and whites folded in last. Place in pan of hot water and bake in moderate oven until firm.

**Baked Summer Squash***Ingredients:*

3 c. mashed, cooked squash	1 egg
2½ c. bread crumbs	1 tsp. onion juice
½ c. milk	⅛ tsp. pepper
6 slices bacon	1 tsp. salt

*Method:*

Broil the bacon, and add 2 tbsp. of the fat to the squash. Combine ingredients and place in a buttered baking dish. Bake in a moderate oven until brown. Garnish with the bacon.

**Vegetables en Casserole I***Ingredients:*

6 potatoes	¼ c. rice
1 turnip	1 tsp. salt
1 c. peas	⅛ tsp. pepper
1 c. tomatoes	⅛ tsp. allspice
1 onion	4 c. brown stock

*Method:*

Prepare vegetables and wash rice. Put ingredients in layers in a casserole, add stock, cover and bake slowly 3 hours.

**Vegetables en Casserole II***Ingredients:*

2 cooked turnips	2 tbsp. butter
4 cooked carrots	1 tsp. salt
4 c. cooked spinach	¼ tsp. pepper

*Method:*

Line a buttered mold with strips of carrots and turnips. Fill with spinach seasoned with butter, salt, and pepper, set in a pan of hot water and bake 20 minutes. Remove from mold and surround with white sauce.

**Eggplant en Casserole***Ingredients:*

2 c. mashed, boiled eggplant	1 tsp. salt
$\frac{1}{2}$ c. stewed tomatoes	$\frac{1}{8}$ tsp. pepper
3 tbsp. butter	1 tbsp. grated onion
3 tbsp. chopped, cooked meat	$\frac{1}{2}$ c. buttered crumbs

*Method:*

Combine vegetables, meat, and seasonings, place in a casserole and cover with crumbs. Brown in a hot oven.

**Boston Baked Beans***Ingredients:*

1 qt. pea beans	1 tbsp. salt
1 lb. fat salt pork	$\frac{1}{2}$ c. molasses, New Orleans
1 tsp. soda	$\frac{1}{2}$ tbsp. mustard
cayenne	boiling water
	1 small onion

*Method:*

Pick over and wash beans, cover with cold water and soak overnight. Drain, cover with fresh water and parboil, with soda. Drain again. Pour boiling water over pork, scrape rind and score. Cut off one thin slice and place with the onion in the bottom of the pot. Put beans in pot, then press pork in beans, leaving only the rind above. Mix the seasonings, molasses, and 1 c. boiling water and pour into the bean pot and bake in slow oven 8 to 10 hours. Add water as needed. Uncover bean pot during the last hour of baking to brown the rind. Serve with Boston Brown Bread.

**Dried Lima Beans***Ingredients:*

1 c. beans	1 tbsp. butter
$\frac{1}{2}$ tsp. salt	$\frac{1}{8}$ tsp. white pepper

*Method:*

Wash the beans and soak overnight in plenty of cold water. Drain, boil in salted water 5 minutes. Add  $\frac{1}{4}$  tsp. baking soda to each

quart water. Put them into the fireless cooker for 4 hours or more. Drain, season with the butter, salt, and pepper, and reheat if necessary.

### Stewed Lentils

#### *Ingredients:*

1 c. lentils	$\frac{1}{2}$ small onion
$\frac{1}{4}$ lb. bacon	water
$\frac{1}{4}$ c. vinegar	

#### *Method:*

Wash lentils and soak overnight. Drain, cover with fresh cold water and cook with bacon and onion several hours, until tender. Drain, reserving 1 c. liquid; thicken this with 2 tbsp. browned flour mixed with 2 tbsp. cold water. Boil 5 minutes, add the vinegar, and reheat the lentils in this sauce. Season with pepper, and salt if necessary.

### White Sauce

PROPORTIONS	FLOUR	BUTTER	SALT	MILK
I. Thin — cream soups . . . .	1 tbsp.	1 tbsp.	$\frac{1}{4}$ tsp.	1 c.
II. Medium — creamed vegetables .	2 tbsp.	2 tbsp.	$\frac{1}{4}$ tsp.	1 c.
III. Thick — creamed oysters . . .	3 tbsp.	3 tbsp.	$\frac{1}{4}$ tsp.	1 c.
IV. Very thick — croquettes . . .	4 tbsp.	1-2 tbsp.	$\frac{1}{4}$ tsp.	1 c.

#### *Method:*

##### *French*

Melt butter, add flour. Add milk, stirring constantly to prevent lumping or burning. Cook until mixture has thoroughly boiled. Add salt and pepper. If made in quantities of more than 2 c., a double boiler should be used in order to prevent burning or scorching.

##### *Hygienic*

Make a paste of flour and milk. Cook in a double boiler for 30 minutes. Just before serving add butter, salt, and pepper. "Hygienic" white sauce is supposed to be more easily digested than that made by the French method as the starch is more thoroughly cooked



and butter not cooked. The French method is more commonly used, however.

### *Uses of White Sauce*

Cream soups	Custard for fillings and ice creams
Creamed vegetables and oysters	Gravies
Croquettes	Soufflés

### *Variations*

Addition of eggs, cheese, fruit juices.

### **Creamed Vegetables**

2 c. vegetable	1 c. white sauce II
----------------	---------------------

### **Scalloped Vegetables**

2 c. vegetables	1 c. white sauce II
	1 c. buttered crumbs

(See rules for scalloped dishes below)

NOTE:  $\frac{1}{2}$  c. grated cheese may be substituted for buttered crumbs.

### **SCALLOPED DISHES**

#### **General Rules**

1. The crumbs used for scalloped dishes are prepared from the inside of stale bread. Crumb the bread by grating, or by rubbing two pieces together.
2. Place the food material in two layers, using one quarter the amount of crumbs on the bottom of the dish, one quarter in the middle, and the remaining half on the top of the dish.
3. Butter the baking dishes and shells.
4. A moderate oven is best used in the baking.

#### **Crumbs for Scalloped Dishes**

##### *Ingredients:*

1 c. crumbs	white pepper or cayenne
$\frac{1}{8}$ tsp. salt	1 tbsp. butter

*Method :*

Melt the butter in a baking dish, remove from fire and stir in seasoned crumbs lightly, using a fork.

**Scalloped Tomatoes***Ingredients :*

1 can or 1 qt. tomatoes	1 tsp. salt
3 c. crumbs	$\frac{1}{4}$ tsp. pepper
3 tbsp. butter	

*Method :*

Prepare according to rule and bake one half hour covered; then uncover to brown crumbs.

**Scalloped Apples***Ingredients :*

3 c. crumbs	$\frac{1}{4}$ tsp. nutmeg
3 tbsp. butter	$\frac{1}{4}$ tsp. cinnamon
3 c. sliced apples	$\frac{1}{2}$ lemon, juice and rind
$\frac{1}{2}$ c. sugar	$\frac{1}{4}$ c. water

*Method :*

Mix sugar and spice. Prepare according to the rule and bake one hour, covered; then uncover to brown crumbs. The water must be added before the top layer of crumbs. If the apples are tart, the lemon juice may be omitted. More water may be needed if the apples are not juicy.

**CREAM SOUPS****Cream of Asparagus Soup***Ingredients :*

1 bunch asparagus cubed	4 tbsp. flour
1 qt. boiling water	$1\frac{1}{2}$ tsp. salt
4 tbsp. butter	pepper
1 pt. milk	

**Cream of Celery Soup***Ingredients:*

1½ c. celery cubed	4 tbsp. flour
1 pt. boiling water	½ tsp. salt
4 tbsp. butter	1 pt. milk
pepper	

**Cream of Chicken Soup***Ingredients:*

1 qt. chicken stock	4 tbsp. flour
1 pt. milk	⅛ tsp. celery salt
4 tbsp. chicken fat	salt and pepper

**Cream of String Bean Soup***Ingredients:*

1 can beans	4 tbsp. flour
1 pt. boiling water	1½ tsp. salt
4 tbsp. butter	pepper
1 pt. meat stock	1 pt. milk

**Cream of Tomato Soup***Ingredients:*

1 qt. tomatoes	⅓ c. flour
¼ tsp. soda	3 tsp. salt
⅓ c. butter	½ tsp. white pepper
1 qt. milk	

*Method:*

Stew the tomatoes slowly 15 minutes. Strain and add soda while hot. Combine with white sauce.

**PURÉES****Corn Soup I***Ingredients:*

1 can corn	4 tbsp. butter
1 pt. water	4 tbsp. flour
1 qt. milk	1½ tsp. salt
1 slice onion	pepper

**Corn Soup II***Ingredients:*

1 can cornlet	1 tbsp. chopped onion
1 pt. water	$\frac{1}{4}$ c. flour
1 qt. milk	2 tsp. salt
$\frac{1}{4}$ c. butter	$\frac{1}{4}$ tsp. white pepper
yolks 2 eggs	

*Method:*

Cook the cornlet with the water 20 minutes. Cook the onion in the melted butter until brown, add flour, seasoning, and the milk gradually as for white sauce. Strain, add strained cornlet, combine mixtures, pour over the well-beaten yolks, and serve at once.

**Pea Soup***Ingredients:*

1 can peas	$\frac{1}{2}$ tsp. salt
1 qt. boiling water	$\frac{1}{2}$ tsp. sugar
5 tbsp. butter	pepper
5 tbsp. flour	1 pt. milk

**Potato Soup***Ingredients:*

3 potatoes	1 tbsp. flour
1 pt. milk or	1 tsp. salt
1 pt. milk and water	$\frac{1}{8}$ tsp. white pepper
2 tsp. chopped onion	celery salt
1 tbsp. butter	2 tsp. chopped parsley

*Method:*

Boil potatoes until soft, drain; scald milk and onion in a double boiler. Beat potatoes with a wire potato masher, add hot liquid, strain, and return to the double boiler. Make a white sauce, using this as liquid. Cook 5 minutes, and add the chopped parsley just before serving.

## Black Bean Soup

*Ingredients:*

1 qt. black beans	1 piece celery root
4 qts. cold water	$\frac{1}{4}$ tsp. mustard
2 tbsp. chopped onion	4 tbsp. butter
2 tsp. salt	2 tbsp. flour
$\frac{1}{4}$ tsp. pepper	1 large lemon
cayenne	2 hard-cooked eggs

*Method:*

Wash the beans and soak them overnight in 2 qts. of cold water, drain and rinse thoroughly; brown the onion in 2 tbsp. of the butter, put in with the beans, add the celery root, and 2 qts. cold water. Cook slowly until beans are soft, adding more water as it boils away; rub through a strainer; add the seasonings and heat. Heat the remaining butter in a saucepan, add the flour, then the hot soup gradually. Cut the lemon and eggs in thin slices and serve with the soup.

## FOOD VALUES

## Baked Beans

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST ¢	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Beans . .	1 c.	188.5	42.41	3.40	112.16	650	.0415	.409	2.11	.013
Salt pork .	$\frac{1}{8}$ lb.	71.5	1.34	61.65		560	.0347	.001	.028	.0002
Onion . .	1 slice	17	.02	.003	.15	7	.0018	.008	.016	.0001
Molasses .	1 tbsp.	7.0	.17		4.83	20	.0009	.02	.02	.0014
Total, cooked	3 $\frac{1}{2}$ c.	856	43.94	65.05	117.14	1237	.0789	.438	2.174	.0147
100-Calorie Portion	$\frac{1}{4}$ c.	69.16	2.74	5.26	9.46	100	.006	.035	.173	.0012

## Creamed Potato

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Potato . .	2 c.	291.6	6.41	.29	54.65	242	.018	.045	.4	.003
Butter . .	2 tbsp.	36.2	.36	30.77		278	.02	.008	.011	
Flour . .	2 tbsp.	14.15	1.58	.014	10.59	50	.0015	.003	.025	.0002
Milk . .	1 c.	245.9	8.11	9.83	12.29	170	.0225	.4	.51	.0005
Salt . .										
Total, cooked	3 $\frac{1}{6}$ c.	575.3	16.47	40.7	77.53	740	.062	.456	.946	.0037
100-Calorie Portion	$\frac{1}{3}$ c.	77.66	2.22	5.49	2.71	100	.008	.063	.132	.0005

## Cream of Pea Soup

Peas . .	1 can	440	15.84	.88	43.12	242	.15	.096	.605	.0036
Milk . .	2 c.	462.4	15.25	18.49	23.12	319	.045	.733	.966	.001
Butter . .	2 tbsp.	39	.39	33.15		300	.034	.009	.012	
Flour . .	2 tbsp.	14	1.57	.14	10.48	50	.0015	.0034	.024	.0019
Water . .	2 c.									
Seasoning										
Total, cooked	4 c.	1034	31.05	52.56	71.82	911	.2307	.8414	1.607	.0065
100-Calorie Portion	$\frac{2}{3}$ c.	113	3.10	5.25	7.18	100	.023	.0841	.06	.0006

## Cream of Tomato Soup

Tomato . .	1 c.	240	2.88	.48	9.6	55	.025	.048	.138	.0093
Butter . .	1 tbsp.	15.5	.15	13.17		119	.0123	.0035	.0047	
Flour . .	1 tbsp.	7.5	.79	.07	5.29	25	.0007	.0017	.0125	.0001
Milk . .	1 c.	233.4	7.14	8.67	11.83	150	.0225	.358	.454	.0005
Seasonings										
Total, cooked	1 $\frac{3}{4}$ c.	423.2	10.96	22.39	26.72	349	.06	.4112	.6092	.0099
100-Calorie Portion	$\frac{1}{2}$ c.	121.63	3.13	6.4	7.64	100	.017	.1176	.1742	.0028

## Cream of Potato Soup

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Potatoes .	3	360	7.9	.36	74.8	300	.012	.057	.498	.0045
Butter .	2 tbsp.	26	.26	22.1		200	.02	.006	.008	
Flour .	2 tbsp.	15	1.58	.15	11.10	50	.001	.0035	.025	.0002
Milk .	1 $\frac{1}{3}$ c.	289	9.5	11.56	14.45	200	.026	.478	.606	.0006
Water .	$\frac{1}{2}$ c.									
Total, cooked	2 $\frac{1}{3}$ c.	690	19.24	34.17	100.35	750	.059	.5445	1.137	.0053
100-Calorie Portion	$\frac{2}{3}$ c.	89.7	2.5	4.44	13.04	100	.007	.0707	.147	.0006

## Cream of Lentil Soup

Milk .	$\frac{3}{4}$ c.	162.34	5.34	6.54	8.10	112	.018	.25	.34	.0003
Butter .	3 tbsp.	58	.58	49.71		450	.03	.0135	.018	
Lentils .	2 tbsp.	28.7	7.37	.29	16.93	100	.005	.03	.18	.0024
Cheese .	1 cu.in.	22.8	6.5	8.17	.004	100	.004	.25	.329	
Water .	1 c.	225								
Seasonings										
Total, cooked	2 $\frac{1}{4}$ c.	534.35	19.79	19.71	25.03	762	.057	.5435	.867	.0027
100-Calorie Portion	$\frac{1}{2}$ c.	70	2.59	2.59	3.29	100	.0075	.0706	.112	.0003

## Split Pea Soup

Peas .	$\frac{1}{4}$ c.	56.2	13.8	.56	34.8	200	.012	.08	.50	.003
Onion .	$\frac{1}{2}$ tbsp.	6.5	.10	.019	.64	3	.001	.0036	.0072	.00003
Butter .	$\frac{3}{4}$ tbsp.	11.5	.11	9.77		88	.01	.0026	.0035	
Flour .	$\frac{3}{4}$ tbsp.	5.6	.62	.0564	4.19	20	.001	.0014	.01	.00008
Milk .	$\frac{1}{2}$ c.	112.2	3.7	4.48	5.6	77	.01	.1771	.233	.00026
Seasonings										
Total, cooked	1 $\frac{3}{4}$ c.	263.5	18.33	14.88	45.23	388	.034	.2647	.7537	.00337
100-Calorie Portion	$\frac{1}{2}$ c.	67.71	4.71	3.82	11.62	100	.0075	.0661	.1884	.0008

## REFERENCES

*Vegetables*

- ABEL. Beans, Peas, and other Legumes as Food. United States Department of Agriculture, Farmers' Bulletin 121 (1900).
- BAILEY. Cyclopedia of Agriculture and Cyclopedia of Horticulture.
- BARROWS. Course in the Use and Preparation of Vegetable Foods. United States Department of Agriculture, Office of Experiment Station, Bulletin 245 (1912).
- BEATTIE. Celery. United States Department of Agriculture, Farmers' Bulletin 282 (1917).
- BREAZEALE. Canning Vegetables in the Home. United States Department of Agriculture, Farmers' Bulletin 359 (1909).
- BUCHANAN. Household Bacteriology.
- CORBETT. A Successful Method of Marketing Vegetable Products. Yearbook of Department of Agriculture for 1912.
- CORBETT. Tomatoes. United States Department of Agriculture, Farmers' Bulletin 220.
- DE RIVAZ, EVELYN. Little French Dinners.
- GEORGE. Vegetarian Cookery.
- LANGWORTHY. Green Vegetables and Their Uses in the Diet. United States Department of Agriculture, Yearbook for 1911.
- LANGWORTHY. Potatoes and other Root Crops as Food. United States Department of Agriculture, Farmers' Bulletin 295 (1907).
- LEACH. Food Inspection and Analysis.
- PARLOA. Preparation of Vegetables for the Table. United States Department of Agriculture, Farmers' Bulletin 256 (1906).
- Iowa State College Agricultural Extension Department. Potatoes, Demonstration, Short Course Class Notes, Nos. 3 and 16.
- SHERMAN. Food Products.
- SHERMAN. Chemistry of Food and Nutrition.
- THOMPSON. Practical Dietetics.
- WILEY. Foods and their Adulterations.



*Soups*

DELIEE. Franco-American Cooking Book.

ELLWANGER. The Pleasures of the Table. An Account of Gastronomy from Ancient Days to the Present Time.

FARMER. The Boston Cooking School Cook Book.

ROBBINS. Creamed Soups and Vegetables. Oregon Agricultural College, Extension Service, No. 135.

## CHAPTER VI

### MILK, CREAM, AND BUTTER

MILK is probably the most important article of diet used to-day, because of the large place it fills not only in the diet of children and invalids but also in the economic and hygienic nutrition of healthy adults.

In qualitative composition milk is an aqueous solution of milk sugar, mineral matter, and albumin with fat globules held in suspension and casein together with mineral matter in a state of semi-solution. Other facts regarding the constituents of milk will be developed in the course of the experimental work included in this chapter.

The quantities of the chief constituents average approximately as follows: water, 87 per cent; milk sugar, 5 per cent; fat, 4 per cent; proteins, 3.3 per cent; ash, 0.7 per cent. Market milk may of course be somewhat less rich in one or more of the foodstuffs than this average, but nearly every state now has legal requirements governing the milk industry and setting at least a minimum standard for the product. In buying milk the sanitary quality should be carefully considered as well as the food value. See Leach's *Food Inspection and Analysis*, Chapter VII, Rosenau's *The Milk Question*, and Sherman's *Food Products*, Chapter III.

Milk is the most important of all foods as a source of body-building material for growing children. While the great economic growth of the milk industry, the progress in the chemical and bacteriological study of milk, and the care given to the legal and sanitary control of the production and handling of

milk are all indications of a growing realization of the importance of milk as a food, yet it is of interest to find that the great quantity of milk used as such in this country amounts on calculation to only a little over a half a pint per day for every man, woman, and child, whereas the study of dietetics teaches us that adults should have at least as much milk as this and children a good deal more — “a quart of milk a day for every child” if possible. The study of milk cookery should therefore have as one of its main objects the development of a higher appreciation of milk as a food and the encouragement of its more liberal use in the diet, both as a beverage and in the greatest variety of cooked foods.

## EXPERIMENTS ON MILK AND MILK PRODUCTS<sup>1</sup>

### Cream

83. — Examine a bottle of milk obtained from a reliable dealer.
- Read the statements on the cap.
  - Of what significance are they?
  - What are the two layers in the bottle?
  - Why is the yellow layer at the top?
84. — *a.* Examine with the microscope a tiny drop of cream.  
*b.* Make a drawing of the fat droplets.
85. — *a.* Divide a quart of cream into four cups: A, B, C, D.  
*b.* Heat A in a double boiler until a thick scum appears. Allow the cream to cool and then beat it with a Dover egg beater. (Keep B, C, and D for subsequent experiments.)  
*c.* Can this cream be beaten stiff?  
*d.* What was the scum which appeared when the cream was heated?
86. — *a.* Whip B with a wire whisk until stiff.  
*b.* Beat *c* with a Dover egg beater until stiff.

<sup>1</sup> A division in the recipes for milk and cheese has been made, but the experiments for milk and milk products have been considered together for purposes of comparison and summary.

*c.* Compare A, B, and C as to flavor, consistency, and volume.

*d.* How do you explain differences noted?

**87.** — Beat D with a Dover egg beater until fat globules form masses and butter results. Drain off buttermilk and save for further experiments.

Compute the per cent of butter obtained from a unit of cream.

**88.** — Wash the butter in cold water until no more buttermilk appears. “Pat” out the water.

*a.* Weigh the washed butter and divide it into two parts of equal weight.

*b.* Add sufficient salt to one part to give it the usual salty flavor.

*c.* Put both parts in the refrigerator for a few hours to ripen.

*d.* Compare as to weight, flavor, and texture.

### Butter

**89.** — Heat a teaspoon each of pure butter, renovated butter, and oleomargarine in separate tablespoons over a bunsen burner.

Note the manner in which each melts and the appearance after melting.

This is called the foam test for butter. Why should the butter boil quietly while the renovated butter and the oleomargarine sputter and crackle?

**90.** — Place a tablespoon of each of the three samples used in Expt. 89 in each of three small beakers containing four tablespoons of sweet milk. Heat the beakers until the fats are melted, then place them in cold water and while the fat is still melted stir each vigorously with a splint of wood. Note the form the pure and renovated butters take and contrast with the condition of the oleomargarine.

### Buttermilk

**91.** — Prepare butter from sweet cream. Prepare butter from an equal volume of sour cream. Compare resulting butter as to flavor, texture, and quantity. (Keep the buttermilk for Expts. 92 and 93.)

**92.** — *a.* Compare each buttermilk as to flavor and color.

*b.* Use each in gingerbread. Is any perceptible difference noticed?

**93.** — *a.* Reaction of milk. Test fresh milk with delicate litmus paper and record results for comparison with tests to be made later.

*b.* Compare the behavior of the two buttermilks from Expt. **91** toward litmus paper with that just observed in the case of sweet milk and with each other. Is there any relation between the difference here seen and that observed in making gingerbread (Expt. **92**)?

### Constituents of Milk

**94.** — *a.* The presence of water and fat in milk has been sufficiently demonstrated in the above experiments.

*b.* If a platinum or quartz dish is available, a little of the milk may be dried and burned to determine whether it yields ash.

**95.** — *a.* Test milk for protein by means of the biuret<sup>1</sup> and xanthoproteic<sup>2</sup> reactions.

*b.* Try heating some of the fresh milk to boiling. Does it contain a protein coagulable by heat like that of egg-white (page 109)?

**96.** — Acidulate another portion of the milk with acetic acid or vinegar, warm gently, and compare with the preceding test. Filter through wet filter paper and save the filtrate. Apply the xanthoproteic reaction<sup>2</sup> to the solid which remains on the filter paper.

**97.** — Test a portion of the filtrate from Expt. **96** for the presence of sugar by means of the Fehling-Benedict test (page 13).

What conclusion can be drawn from the result?

Do all sugars respond to this test?

**98.** — Apply the iodine test (page 13) both to a portion of the filtrate from Expt. **96** and to a separate portion of the whole milk.

<sup>1</sup> *Biuret Reaction.* If a few drops of copper sulphate solution are added to protein, in solution, and then an excess of caustic potash added, a red to violet coloration is produced.

<sup>2</sup> *Xanthoproteic Reaction.* When nitric acid is added to protein (either in solution or in solid form) a yellow color is produced which, on the addition of ammonia, becomes bright orange.

What conclusions are justified as to the nature of the carbohydrate portion of milk?

**99.** — Heat milk in double boiler.

Strain the heated milk through a damp cheesecloth and test again for the xanthoproteic reaction.

**100.** — Prepare 4 junket custards, using 1 c. sweet milk and  $\frac{1}{4}$  junket tablet dissolved in  $\frac{3}{4}$  tsp. cold water in each instance. Proceed as follows:

- a.* Add dissolved junket to cold milk.
- b.* Add dissolved junket to warm milk.
- c.* Add dissolved junket to milk and boil 1 minute.
- d.* Add dissolved junket to cold milk. Allow *a*, *b*, and *c* to stand in room at room temperature. Put *d* in refrigerator.
- e.* Compare results at end of 10 minutes.
- f.* Which method has proven most satisfactory?
- g.* Why?
- h.* What is junket?

**101.** — Prepare 1 qt. of junket according to the most successful method. After the mixture has stood for 1 hour, cut with a knife into small pieces. Note results. What is the yellowish liquid that appears?

**102.** — *a.* Strain mass prepared in Expt. **101** through wet cheesecloth.

*b.* Apply the following tests to residue and filtrate respectively:

- Biuret, page 85
- Coagulation on heating
- Xanthoproteic, page 85
- Fehling-Benedict solution, page 13

*c.* What are your conclusions?

### Milk (Sour)

**103.** — Have ready milk which has been sour 1 day, 2 days, 3 days.

- a.* Test equal volumes of each with litmus paper.
- b.* Neutralize each with a solution of baking soda, testing with litmus paper.
- c.* Note the amount of soda required in each instance.

**104.** — *a.* Heat equal portions of each specimen of sour milk in a double boiler.

*b.* Note the clotting which appears.

*c.* Which clots quickest and in largest quantity?

*d.* To what is this due?

**105.** — *a.* Add salt to each portion in double boiler in the proportion of  $\frac{1}{8}$  tsp. to 1 c. of sour milk.

*b.* Note the effect.

*c.* How do you explain the result?

**106.** — Strain the clotted masses from Expt. **105** through wet cheesecloth and allow to hang undisturbed until filtrate no longer drips. Test as usual with:

Biuret, page 85

Xanthoproteic, page 85

Coagulation on heating

Fehling-Benedict solution, page 13

**107.** — *a.* Compare the cheese obtained in Expt. **106** with that made from sweet milk.

*b.* Note the difference in consistency, texture, and flavor.

*c.* To what is this due?

**108.** — Test each specimen of sour milk with litmus paper.

*a.* Which turns the paper quickest?

*b.* What acid is present in sour milk?

*c.* How does it originate?

(Leach, *Food Inspection and Analysis*.)

*d.* With the litmus paper still in the milk, add sufficient baking soda to neutralize the acid. Is a physical or chemical change produced?

*e.* What is the gas given off after the soda is added?

*f.* In what food products is this principle applied?

*g.* Test 1 c. of sour milk with litmus paper and determine how much soda it is necessary to add to neutralize the acid.

*h.* Take an average of the results of the class and compare with the amount usually given in cook books. How does it compare?

**109.** — *a.* Test 1 c. of sweet milk with litmus and add sufficient vinegar to produce the same intensity of color as in **108**, *g*.

*b.* Neutralize a part of this milk with soda.

*c.* Compare the amount of soda needed with **108**, *g*.

*d.* Prepare gingerbread, using the milk in **108**, *g* in one instance and that in **109**, *a* in the second instance.

*e.* Compare the two products. Is one preferable to the other?

*f.* Repeat *g* and heat the milk until the curd separates out. Compare this curd with that of normally sour milk and also with the curd made with junket and sweet milk.

*g.* What are the noticeable differences and to what are they due?

*h.* What sources of sour milk and curd have we?

### Cheese

Cheese has already been prepared with sweet and sour milk. Test now commercial cheese.

**110.** — Prepare three equal weights of American cheese, A, B, C. Heat A in a saucepan, B in a double boiler, and C in hot milk. Compare results.

**111.** — Prepare two equal weights of American cheese, A, B. Cut into small pieces and put into equal volumes of warm milk.

*a.* Continue heating A in a double boiler until cheese is melted. Examine consistency of mixture.

*b.* Continue heating B in saucepan and allow milk to boil. Compare result with that in *a*. How do you account for the difference in appearance, consistency, and difficulty in mastication?

### Absorption of Odors

**112.** — Allow samples of butter, cream, sweet milk, and sour milk to stand in a compartment by themselves in the refrigerator. Arrange corresponding samples in a compartment already containing cooked onions or cooked cauliflower.

Allow each to stand 1 day. Note taste and odor of each.



**113.** — Put  $\frac{1}{4}$  tsp. of kerosene into a pitcher. Allow to stand 1 hour. Wash the pitcher thoroughly. Turn in 1 c. sweet milk. Allow this to stand 1 hour. Note taste and odor.

## MILK DESSERTS

## Junkets

INGREDIENTS	PLAIN	COFFEE	CHOCOLATE
Milk . . . . .	1 qt.	1 qt. and 1 c. boiled coffee	1 qt. (1 oz. chocolate or 2 tbsp. cocoa — boil 5 min. with $\frac{1}{2}$ c. of the qt.)
Sugar . . . . .	3 tbsp.	$\frac{1}{2}$ c.	$\frac{1}{2}$ c.
Vanilla . . . . .	1 tsp.		1 tsp.
Tablet . . . . .	1	1	1
Cold water . . . . .	1 tbsp.	1 tbsp.	1 tbsp.

*General Method:*

Dissolve tablet in cold water.

Heat milk to lukewarm temperature in a double boiler.

Add sugar and stir until dissolved.

Add dissolved tablet and pour into serving glasses.

Let stand at room temperature until firm.

Place in refrigerator until ready to serve.

Garnish with whipped cream or fruit.

## MILK AND EGG DESSERTS

## Custards

*General Rules:*

Scald the milk in a double boiler. Beat eggs slightly, add sugar and salt and the scalded milk gradually. A moderate temperature is necessary in cooking custards to prevent curdling. Cool cup custards before turning out.

## Soft Custards

Cook custard in double boiler, stirring constantly until mixture coats the spoon. Strain. Cool and flavor.

**Baked Custards**

Strain uncooked custard into cups previously wet with cold water. Place in pan of hot water in moderate oven until firm.

TEST : A silver knife inserted in custard will come out clean when custard is firm enough.

**Steamed Custards**

Place cups in a steamer or in pan of boiling water. Place towel under cover to absorb moisture.

**Caramel***Ingredients :*

1 c. sugar

 $\frac{1}{2}$  c. boiling water*Method :*

Melt sugar in iron pan over a low flame. Move gently with a knife and occasionally change position of pan to prevent burning the sugar. When the sugar has melted to a brown sirup, add the boiling water and simmer a little longer. Strain.

**Caramel Custard I**

Prepare caramel and add it to the scalded milk.

NOTE : The caramel is in the custard.

**Caramel Custard II**

Prepare caramel and divide it equally among the custard cups. Place a spoon in the cup and pour the custard slowly down it. This keeps the two from mixing.

NOTE : The caramel is a sauce for the custard, when turned out.

**Custard***Ingredients :*

1 pt. milk

4 tbsp. sugar

2 eggs or 4 yolks

 $\frac{1}{8}$  tsp. salt $\frac{1}{2}$  tsp. vanilla

**Chocolate Custard**

$\frac{1}{2}$  oz. chocolate to 1 pt. milk

Melt chocolate in a double boiler and add the scalded milk to it a teaspoonful at a time until smooth. The remainder may be added rapidly.

NOTE: Follow directions carefully so the chocolate will not separate.

**VARIATIONS****Floating Island**

Soft custard served in glasses with meringue on top. Garnish with jellies or cherries.

**Tapioca or Rice Custard***Ingredients:*

$\frac{1}{4}$ c. rice or pearl tapioca	$\frac{2}{3}$ c. sugar
2 c. milk	$\frac{1}{4}$ tsp. salt
2 eggs	1 tsp. vanilla

*Method:*

Cook soaked tapioca or rice in the scalded milk. Proceed as for plain custard.

- a. Cook in double boiler as a soft custard.
- b. Bake in buttered pudding dish as a baked custard.

**Bread Puddings**

Soak stale bread crumbs from inside of loaf in scalded milk 30 minutes. Prepare custard with other ingredients. Bake in buttered pudding dish as a baked custard.

Save whites of eggs for a meringue.

**Bread Pudding***Ingredients:*

2 c. crumbs	$\frac{1}{2}$ tsp. salt
1 qt. milk	2 eggs
$\frac{1}{3}$ c. sugar	grated nutmeg
1 c. raisins or currants	

### Queen of Puddings

Spread a baked bread pudding with jam or jelly before placing meringue on top.

#### Chocolate Bread Pudding

*Ingredients:*

2 oz. chocolate

1 tsp. vanilla

and ingredients for plain Bread Pudding

### FOOD VALUES

#### Baked Custard

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST ¢	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Milk . . .	2 c.	443.2	14.62	17.7	22.16	306	.045	.70	.92	.001
Eggs . . .	2	98.1	13.14	10.3		145	.06	.087	.348	.0027
Sugar . . .	4 tbsp.	51.2			51.2	20	.007			
Salt . . .	1 $\frac{1}{8}$ tsp.									
Nutmeg . .	$\frac{1}{4}$ tsp.									
Total, cooked	4 $\frac{1}{4}$ c.	574.3	27.76	28.02	73.36	471	.112	.787	1.268	.0037
100-Calorie Portion .	1 c.	120.6	5.82	5.8	15.4	100	.023	.165	.266	.0007

#### Rice Pudding with Eggs

Cooked rice .	$\frac{1}{2}$ c.	96.8	2.71	.10	23.62	106	.0048	.003	.06	.0003
Milk . . .	$\frac{1}{2}$ c.	111.7	3.67	4.46	5.58	77	.011	.177	.234	.0002
Egg . . .	$\frac{1}{2}$	28.5	3.82	2.99		42	.016	.025	.1	.0008
Sugar . . .	1 tbsp.	13.8			13.8	55	.002			
Vanilla . .	$\frac{1}{8}$ tsp.	13.					.0022			
Total, cooked	1 c.	214.9	10.2	7.55	43	280	.036	.205	.394	.0013
100-Calorie Portion .	$\frac{1}{4}$ c.	76.49	3.06	2.26	12.9	100	.01	.006	.011	.0003

## REFERENCES

*Milk*

- ATWATER. Milk as Food. United States Department of Agriculture, Farmers' Bulletin 74 (1904).
- BUCHANAN. Household Bacteriology.
- CONN. Bacteria in Milk and its Products.
- CUNNINGHAM. The Production of Clean Milk. Ohio State University, Agricultural College, Farmers' Reading Course (1913).
- ECKLES. Dairy Cattle and Milk Production.
- FARRINGTON and WOLL. Testing Milk and its Products.
- GUTHRIE. Cream Separation. Cornell Reading Courses. Dairy-ing Series No. 5 (1915).
- HARCOURT. Food Value of Milk and its Products. Ontario Agricultural College. Toronto (1914).
- KELLY. Medical Milk Commissions and Certified Milk. United States Department of Agriculture, Bureau of Animal Industry, No. 1 (1913).
- LAWSON. Inexpensive Aids in Producing Sanitary Milk. The Maryland Agricultural Experiment Station, Bulletin 181 (1914).
- LEACH. Food Inspection and Analysis.
- MILNER. The Use of Milk as Food. United States Department of Agriculture, Farmers' Bulletin 363 (1911).
- PEARSON. Facts about Milk. United States Agricultural Department, Farmers' Bulletin 42 (1906).
- ROGERS. Bacteria in Milk. United States Department of Agriculture, Farmers' Bulletin 490 (1912).
- ROGERS. Direction for the Home Pasteurization of Milk. United States Department of Agriculture, Bureau of Animal Industry, Circular 197 (1912).
- ROSENAU. Milk in its Relation to the Public Health. United States Public Health Service, Hygienic Laboratory, Bulletin 56.
- ROSENAU. The Milk Question.
- SAVAGE. Milk and the Public Health.
- SHERMAN. Food Products.
- SHERMAN. Chemistry of Food and Nutrition.

SHERMAN. Methods of Organic Analysis.

SWITHINBANK and NEUMANN. Bacteriology of Milk.

VAN SLYKE. Modern Methods of Testing Milk and Milk Products.

WING. Milk and its Products.

WHITAKER, ROGERS, and HUNT. The Care of Milk and its Use in the Home. United States Department of Agriculture; Farmers' Bulletin 413 (1913).

### *Butter*

CLEVENGER. Buttermaking. Ohio State University, Agricultural College, Farmers' Reading Course.

FARRINGTON and MEYERS. A Comparison of Aniline and Anatto Butter Colors in Buttermaking. University of Wisconsin, Agricultural Experiment Station.

GUTHRIE. Farm Butter Making. Cornell Reading Courses, vol. 3, No. 60, Dairying Series No. 4.

HASTINGS. The Propagation of Pure Starters for Butter and Cheese Making. The University of Wisconsin, Agricultural Experimental Station.

PATRICK. Household Tests for the Detection of Oleomargarine and Renovated Butter. United States Department of Agriculture, Farmers' Bulletin 131.

RASMUSSEN. A Study of Farm Buttermaking in New Hampshire. New Hampshire Agricultural Experiment Station, Durham, New Hampshire.

## CHAPTER VII

### CHEESE

CHEESE is made from milk or cream by coagulating the casein with rennet or lactic acid. Ripening ferments, seasonings, and coloring matter may be added. Cheese is divided into two main types: the *hard cheeses* such as Cheddar, Edam, Swiss, Parmesan, and Roquefort; and the *soft cheeses* such as Brie, Camembert, Limburg, Neufchâtel, Gorgonzola, and Stilton. Much of the larger part of the cheese made in this country is of the type of the Cheddar cheese and is known as American Cheddar cheese. The process of making Cheddar cheese is divided into several distinct steps as follows: (1) inspection of milk, (2) ripening of milk, (3) addition of color, (4) coagulating the milk, (5) cutting the curd, (6) stirring and heating the curd, (7) removing whey, (8) cheddaring the curd, (9) milling the curd, (10) salting and pressing, (11) ripening or curing the cheese. For full description of these steps see Sherman's *Food Products*, pages 89-94.

The different varieties of whole milk cheese do not differ greatly from an average composition of about one third water, one third fat, and one fourth protein (the small remainder being mainly salt). The fat is in a finely divided state and is chemically the same as butter fat. The protein is more or less digested casein (some albumin). The ripening process changes the proteins not only to soluble proteins, but to proteoses, peptones, amino acids, and ammonia. The ash is high in calcium, phosphorus, sulphur, and iron and sodium and chlorine from the salting. Cheese is a very concentrated food, so should

be eaten in small quantities to avoid danger of irritation of the stomach. Cheese may be used interchangeably with meats and fish, and the time is coming when it will occupy a more prominent place in the dietary than it does at present. Foreign cheeses are expensive, but American cheese may be classed among the most economical of the high protein foods.

### Eggs with Cheese I

#### *Ingredients:*

3 hard-cooked eggs	few grains cayenne
1 tbsp. flour	$\frac{1}{4}$ c. grated cheese
1 c. milk	4 slices toast
	$\frac{1}{2}$ tsp. salt

#### *Method:*

Make a thin white sauce with the flour and milk and seasonings. Add the cheese and stir until melted. Chop the whites and add them to the sauce. Pour the sauce over the toast, force the yolks through a potato ricer or strainer, sprinkle over the toast.

### Eggs with Cheese II

#### *Ingredients:*

4 eggs	$\frac{1}{4}$ tsp. salt
1 c. or 4 oz. grated cheese	few grains cayenne
1 c. stale bread crumbs	

#### *Method:*

Break the eggs into a buttered baking dish or into ramekins and cook them in a hot oven until they begin to turn white around the edge. Cover with the mixture of crumbs, cheese, and seasonings. Brown in a very hot oven.

### Eggs with Cheese III

#### *Ingredients:*

$\frac{1}{2}$ lb. cheese grated or cut into small pieces	1 tbsp. chopped parsley
8 eggs	few grains nutmeg
	$\frac{1}{2}$ tsp. salt



*Method:*

Beat the eggs slightly, mix them with the other ingredients, cook over a very slow fire, stirring constantly, so that the cheese may be melted by the time the eggs are cooked.

**Cheese Fondue I***Ingredients:*

$1\frac{1}{3}$ c. soft bread crumbs	4 eggs
$1\frac{1}{2}$ c. grated cheese	1 c. hot water
	$\frac{1}{2}$ tsp. salt

*Method:*

Mix the water, bread crumbs, salt, and cheese; add the yolks thoroughly beaten; into this mixture cut and fold the whites of eggs beaten until stiff. Pour the mixture into a buttered baking dish and bake 30 minutes in a moderate oven. Serve at once.

**Cheese Fondue II***Ingredients:*

$1\frac{1}{3}$ c. hot milk	1 tbsp. butter
$1\frac{1}{3}$ c. stale bread crumbs	4 eggs
$1\frac{1}{3}$ c. grated cheese	$\frac{1}{2}$ tsp. salt

*Method:*

Heat the milk in a double boiler, add the crumbs and allow the mixture to stand 15 minutes in hot water. Beat the yolks of eggs and mix thoroughly with the milk and crumbs. Add the butter, cheese, and salt. Fold in the stiffly beaten whites, pour into a buttered baking dish and bake 30 minutes in a moderate oven. Serve at once.

**Cheese Fondue III***Ingredients:*

$1\frac{1}{2}$ c. bread crumbs	1 egg
$1\frac{1}{2}$ c. warm milk	2 tbsp. butter
$1\frac{1}{2}$ c. cheese	8 crackers (warmed)
	seasoning

*Method:*

Allow the bread to soak in the warm milk 10 minutes. Add the butter and cheese to this mixture and when the cheese is melted, add

the eggs slightly beaten. Add the seasoning and allow the whole mixture to cook in a double boiler until thick. Serve at once on warmed crackers.

### Cheese Omelet I

Cheese may be made into omelets in several ways. An omelet may be served with thin cheese sauce made in the following proportions:

1  $\frac{1}{2}$  tbsp. flour  
 $\frac{1}{4}$  c. grated cheese  
 1 c. milk

This sauce may also be added to omelets in which boiled rice, minced meat, or some other nutritious material has been included.

### Cheese Omelet II

Grated cheese may be sprinkled over an omelet before it is served.

### Cheese Omelet III

#### *Ingredients:*

yolks of 2 eggs	salt and pepper
2 tbsp. hot water	whites of 4 eggs
1 c. grated cheese	1 tbsp. butter

#### *Method:*

Beat the yolks until lemon-colored and add the hot water and the seasoning. Beat the whites until they are stiff, and add the cheese. Cut and fold the two mixtures together. Proceed as for Foamy Omelet.

### Welsh Rarebit I

#### *Ingredients:*

$\frac{1}{4}$ lb. cheese, grated	cayenne
$\frac{1}{4}$ c. cream or milk	1 egg
$\frac{1}{2}$ tsp. mustard	2 tsp. butter
$\frac{1}{2}$ tsp. salt	dry toast

#### *Method:*

Put the cheese and milk or cream into a double boiler. Mix the mustard, salt, and cayenne. Add the egg and beat well. When the

cheese is melted, stir in the mixture of dry ingredients and egg, then the butter, and cook until it thickens. Stir constantly. Pour it over hot toast.

### Welsh Rarebit II

#### *Ingredients:*

2 tbsp. butter	$\frac{1}{4}$ tsp. mustard
1 lb. soft milk cheese, cut in small pieces	few grains cayenne
$\frac{1}{2}$ tsp. salt	1 c. milk
	2 eggs

#### *Method:*

Put butter in chafing dish and when melted add the cheese and seasonings; as cheese melts, add milk gradually, stirring constantly; then eggs beaten slightly. When eggs are cooked and mixture has thickened, serve on crackers or bread toasted on one side, rarebit being poured over untoasted side. A rarebit should be smooth and of creamy consistency, never stringy.

### Red Bunny

#### *Ingredients:*

2 tbsp. butter	$\frac{3}{4}$ c. milk
2 tbsp. flour	$\frac{3}{4}$ c. stewed and strained tomatoes
$\frac{1}{8}$ tsp. soda	1 lb. cheese
2 eggs	
	seasonings

#### *Method:*

Melt the butter in a saucepan, add the flour and milk. When thoroughly cooked add the cheese cut in fine pieces, the eggs slightly beaten, and the seasonings. Let this mixture cook until the cheese is melted and the eggs cooked. Have ready toasted whole wheat or graham bread and when ready to serve add the soda to the hot tomato, stir this into the cheese mixture and serve at once.

### Cheese Cakes

#### *Ingredients:*

1 qt. milk	few grains nutmeg
1 junket tablet	3 tbsp. butter
2 tbsp. sugar	2 tbsp. currants or small raisins
yolks of 2 eggs	

*Method:*

Warm the milk and add the dissolved junket tablet. Let the milk stand until the curd forms, then break up the curd and strain off the whey. Add the other ingredients to the curd; line patty tins with pastry, fill them with the mixture, and bake.

**Cheese Soufflé with Pastry***Ingredients:*

2 eggs	$\frac{1}{2}$ c. Swiss cheese cut
$\frac{2}{3}$ c. thin cream	in small pieces
salt, cayenne, and	1 c. grated cheese
nutmeg	

*Method:*

Add the eggs to the cream and beat slightly, then add the cheese and seasoning. Bake 15 minutes in a hot oven, in patty tins lined with puff paste.

**Cheese Custard***Ingredients:*

1 c. grated cheese	yolks of 2 eggs
$\frac{1}{2}$ c. cream or rich milk	salt and paprika

*Method:*

Mix the cream and the cheese and heat until the cheese is melted. Remove from the fire and add the yolks of the eggs and seasonings. Bake in buttered ramekins. Serve with jelly or preserves.

**Scalloped Apples with Cheese**

Substitute riced cream cheese for butter in Scalloped Apples.

**Milk and Cheese Soup***Ingredients:*

3 c. milk	1 c. grated cheese
$1\frac{1}{2}$ tbsp. flour	salt and paprika

Thicken the milk with the flour, cooking thoroughly. When ready to serve, add the cheese and the seasoning.

**Vegetable and Cheese Soup***Ingredients:*

2 c. stock	2 tbsp. butter
2 tbsp. finely chopped carrots	2 tbsp. flour
1 tbsp. chopped onion	1½ tsp. salt
1 blade of mace	1 c. scalded milk
¼ c. grated cheese	

*Method:*

Cook the vegetables a short time in one half of the butter, add the stock and the mace, boiling 15 to 20 minutes. Strain and add the milk. Thicken with flour cooked in the remaining butter. Just before serving, add the cheese and cook until it is melted.

**Cheese Loaf**

A cheese loaf is a mixture of grated cheese, bread crumbs, and chopped legumes or nuts. Vegetable stock is added to make of the right consistency to shape into a loaf. Bake in a moderate oven, basting frequently with butter and water. Spinach, lettuce, or beet tops may be substituted for legumes.

**Bean Loaf***Ingredients:*

1 lb. cooked beans	bread crumbs
½ lb. English dairy cheese	salt and pepper

*Method* (as above).

**Lima Bean Loaf***Ingredients:*

2 c. cooked lima beans	bread crumbs
¼ lb. cream cheese	3 pimentoes

*Method* (as above).

**Nut Loaf***Ingredients:*

1 c. grated cheese	1 tbsp. butter
1 c. chopped English walnuts	juice of ½ lemon
1 c. bread crumbs	salt and pepper
2 tbsp. chopped onion	

*Method* (as above).

**Spinach Loaf***Ingredients:*

2 qts. spinach (cooked)	salt
1 c. grated cheese	bread crumbs
	1 tbsp. butter

*Method* (as above).

**Cheese with Tomato and Corn***Ingredients:*

1 tbsp. butter	2 c. grated cheese
$\frac{3}{4}$ c. corn	1 pimento
$\frac{1}{2}$ c. tomato purée	2 egg yolks
1 tsp. salt	$\frac{1}{2}$ tsp. paprika

*Method:*

Heat the purée in a double boiler, add the butter, corn, salt, paprika, and pimento. When the mixture is hot, add the grated cheese; and when the cheese is nearly melted, add the egg yolks slightly beaten. Allow the total mixture to cook until thick. Serve on toasted bread.

**Italian Rice***Ingredients:*

1 c. rice	1 tsp. salt
2 tbsp. butter	$\frac{1}{2}$ c. grated cheese
2 c. tomatoes	4 tbsp. chopped green pepper

*Method:*

Wash rice and cook in boiling water until soft. Melt butter in saucepan, add green pepper and sauté 5 minutes; add cooked rice, tomatoes, and salt. Let cook until tomatoes are soft. Add grated cheese and continue cooking until cheese is melted. Serve at once.

**Turkish Pilaf***Ingredients:*

$\frac{1}{2}$ c. rice	$1\frac{3}{4}$ c. hot water
1 tbsp. butter	salt
1 c. boiling water	pepper
	1 c. tomatoes

*Method:*

Wash rice and brown in the butter. Add water and steam until water is absorbed. Add the tomatoes and cook until rice is soft. Season. A little grated cheese may be added.

**Cheese Balls***Ingredients:*

1½ c. grated cheese	cayenne
1 tbsp. flour	whites 3 eggs
¼ tsp. salt	cracker dust

*Method:*

Mix cheese with flour and seasonings. Beat whites of eggs until stiff and add to the first mixture. Shape in small balls, roll in cracker dust, fry in deep fat, and drain on brown paper. Serve with salad course.

**Cheese Straws I***Ingredients:*

1 c. grated cheese	¼ tsp. salt
1 c. fresh bread crumbs	⅛ tsp. pepper
⅔ c. flour	cayenne
1 tbsp. butter	1 tbsp. milk

*Method:*

Cream the butter, add flour, crumbs, grated cheese, and seasonings; mix thoroughly; add milk. Roll ¼ inch thick, cut ¼ inch wide and 6 inches long. Bake until brown in a moderate oven. Serve with salad course.

**Cheese Straws II**

Roll out plain or puff paste until one fourth of an inch thick. Spread one half of it with grated cheese. Fold over the other half and roll out again. Repeat the process three or four times. Cut into strips and bake. Serve with soup or salad course.

**Cheese Gingerbread I***Ingredients:*

1 c. molasses	2 c. flour
4 oz. cheese	2 tsp. ginger
1 tsp. soda	½ tsp. salt

½ c. water

*Method:*

Heat the molasses and the cheese in a double boiler until the cheese is melted. Add the soda and stir vigorously. Mix and sift dry ingredients and add them to the molasses and cheese alternately with the water. Bake 15 minutes in small buttered tins.

**Cheese Gingerbread II**

*Ingredients:*

$\frac{1}{2}$ c. molasses	1 tsp. soda
$\frac{1}{2}$ c. sugar	2 tsp. ginger
4 oz. cheese	$\frac{1}{2}$ tsp. salt
2 c. flour	$\frac{3}{4}$ c. water

*Method:*

Rub the cheese and the sugar together. Add the molasses. Mix and sift the dry ingredients and add them to the cheese mixture alternately with the water.

**FOOD VALUES**

**Macaroni and Cheese**

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Macaroni . .	$\frac{3}{5}$ c.	42	5.55	.37	29.12	150	.0127	.012	.144	.0006
Cheese . .	$\frac{1}{4}$ c.	24	6.5	8.6	.07	100	.0125	.25	.329	.0003
Milk . . .	$\frac{3}{5}$ c.	150	4.7	6	7.5	100	.015	.239	.303	.0003
Butter . .	2 tbsp.	39	.39	23.15		300	.002	.009	.012	
Flour . . .	2 tbsp.	16.8	1.58	.16	12.58	50	.0015	.004	.025	.0002
Bread crumbs	$\frac{3}{4}$ c.	22	1.80	.26	11.59	50	.003	.005	.037	.0002
Total, cooked	2 c.	323	20.58	38.57	60.86	750	.0477	.519	.850	.0016
100-Calorie Portion <sup>1</sup>	$\frac{1}{4}$ c.	71.99	2.73	5.12	8.09	100	.0063	.069	.113	.0002

<sup>1</sup> Also called Standard Portion (S. P.).



## Rice with Cheese and Tomatoes

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Raw rice . .	½ c.	100	7.9	.29	78.6	350	.0218	.01	.19	.001
Tomatoes . .	1 c.	230	2.77	.46	9.24	50	.0231	.043	.125	.0008
Butter . . .	1 tbsp.	14	.14	11.9		108	.0109	.003	.004	
Cheese . . .	2 oz.	56.7	16.3	22.3		250	.0310	.623	.82	.0007
Salt . . .	1 tsp.									
Total	2½ c.	524.1	27.11	34.95	87.84	758	.0868	.679	1.139	.0025
100-Calorie Portion <sup>1</sup> . .	⅓ c.	68.1	3.58	4.53	11.59	100	.0112	.089	.15	.0003

## REFERENCES

*Cheese*

BUCHANAN. Household Bacteriology.

CONN. Bacteria in Milk and its Products.

DOANE. The Digestibility of Cheese. United States Department of Agriculture, Bureau of Animal Industry, Circular 166 (1911).

DOANE and LAWSON. Varieties of Cheese: Descriptions and Analysis. United States Department of Agriculture, Bureau of Animal Industry, Bulletin 105.

GIRONCI, M. Italian Recipes, translated and arranged by.

LANGWORTHY and HUNT. Cheese and its Economical Uses in the Diet. United States Department of Agriculture, Farmers' Bulletin 487 (1912).

LARSON and WHITE. Dairy Technology.

MARSHALL. Microbiology.

SHERMAN. Food Products.

<sup>1</sup> Also called Standard Portion (S. P.).

STOLTZ. Some Dairy By-products: Fermented Milk, Pimento Cheese. Ohio State University, Agricultural College, Farmers' Reading Course (1913).

VAN SLYKE and PUBLLOW. The Science and Practice of Cheese Making.

WILEY. Foods and their Adulterations.

WING. Milk and its Products.

## CHAPTER VIII

### EGGS, SOUFFLÉS, AND CROQUETTES

EGGS have been used for food from the earliest times to the present day. While those of other fowl are also eaten, hens' eggs are so far the most common that they will be understood when the term eggs is used — though most of the statements made would apply to the eggs of other fowl also.

The nutrients of eggs are interesting in their nature and will be studied experimentally as described below. For statements of the quantitative composition see Leach's *Food Inspection and Analysis*, Chapter IX, and Sherman's *Food Products*, Chapter V. From the place of eggs in nature and from the results of nutrition experiments we know that the constituents of eggs are adapted to serve as material for the construction of muscle, bone, and blood.

The best egg is naturally one strictly fresh. Newly laid eggs may be preserved by cold storage or water glass (sodium or potassium silicate). Other methods practiced to some extent and more or less successfully are packing the eggs in sawdust, salt, or lime, or coating the shell with lard, paraffin, or wax. Cold storage and the use of water glass are the best methods. Other methods are less effective and are apt to impart a disagreeable flavor.

### EXPERIMENTS

114. — Determine: *a.* about how many unbroken eggs there are in a pound.

*b.* how many eggs minus the shell there are in a pound.

c. how many tablespoonfuls in 1 whole egg :

1. unbeaten.

2. beaten.

d. how many tablespoonfuls in the beaten yolk and white, respectively.

**115.** — Examine with a hand lens a portion of egg shell. Note its porous condition. Examine an egg shell which has been immersed in water glass. How does this differ from that first examined? Explain the difference. What is water glass? How does water glass preserve eggs?

**116.** — Various other preservatives are used to keep eggs. Explain the use of the following :

lime

lard

paraffin

sawdust

vaseline

cold storage

### Cooking of Eggs. Temperature and Time

**117.** — For this experiment select saucepans of uniform size, shape, and material, using 1 pint of water in each case.

a. boil egg rapidly for 1 minute } have the water boiling

b. boil egg rapidly for 3 minutes } when the egg is immersed.

c. put egg in water at  $80^{\circ}$  C., cover and let stand for 10 minutes.

d. put egg in cold water and bring to the boiling point.

e. boil an egg for 10 minutes.

f. boil an egg for 20 minutes.

g. put an egg in water at  $80^{\circ}$  C., cover and allow to stand for 45 minutes.

h. put an egg in water at boiling point, cover and allow to stand 45 minutes.

**118.** — Arrange a repetition of the above experiment so that eggs will be ready to remove from shell at the same time. Remove egg from shell. Examine and compare yolks and whites as to texture, ease of removing from shell, firmness of white, toughness of white.

**119.** — Remove eggs from shell and cook as follows, using 1 pt. of water in each instance. Use first an iron frying pan, then an agate or enamel pan. Compare the results.

*a.* Poach egg in hot water until yolk is coated. (Save the water.)

*b.* Repeat, using 1 tsp. salt in water.

*c.* Repeat, using 1 tsp. vinegar in water.

*d.* Turn egg into boiling water, remove from bunsen burner, cover and let stand 2 minutes.

*e.* Compare each result as to texture, firmness of yolk, taste. Save the water in each instance for the next experiment.

**120.** — Examine the water used in Expt. 119, *a*, with the following tests:

Biuret, page 85

Xanthoproteic, page 85

Iodine, page 13

Fehling-Benedict solution, page 13

Filter a little of the water used in 119 and heat filtrate.

Conclusions?

**121.** — Beat an egg white until stiff, fold in 3 tbsp. granulated sugar. Drop by spoonfuls on to a greased paper and bake in a slow oven until brown. Try to remove  $\frac{1}{2}$  of the meringue at once. Allow the remainder to stand until cold. Remove. Compare with those removed while warm. Explain the difference.

### Soft-cooked Egg

*Ingredients:*

1 egg

1 c. boiling water

*Method:*

Place boiling water in a saucepan. Put unbroken egg carefully in saucepan, cover pan and let stand 5 minutes.

### Hard-cooked Egg

Prepare as soft-cooked, but allow egg to remain in water 45 minutes.

**Coddled Egg**

Butter a ramekin. Break an egg carefully into a saucer and slip into the ramekin. Place in a pan of boiling water and cook until the white is firm.

**Shirred or Baked Egg**

Prepare as coddled egg. Cook in a pan of water in the oven. Ramekins may be lined with seasoned buttered crumbs and egg covered with the crumbs.

**Poached Egg**

Rub the bottom of an omelet pan lightly with butter. Fill pan three fourths full of boiling water. Break an egg into a saucer and slip into the boiling water. Lower flame so the water will not boil, and allow egg to remain in the water 3-10 minutes. If the water does not cover the yolk, dip water over it carefully with a spoon until a film forms over yolk. Remove with a skimmer to a slice of buttered toast and garnish with parsley.

**Scrambled Eggs***Ingredients:*

5 eggs

 $\frac{1}{8}$  tsp. pepper $\frac{1}{2}$  c. milk $\frac{1}{2}$  tsp. salt

2 tbsp. butter

*Method:*

Beat eggs slightly, add seasonings and milk. Heat omelet pan, put in butter, and when melted pour in the mixture. Cook until creamy, stirring and scraping from the bottom of the pan.

**Omelets**

For omelets select large eggs. Use 1 tbsp. of liquid and  $\frac{1}{8}$  tsp. of salt for each egg. Never try to make an omelet using more than 4 eggs, as mixture will brown before being cooked through. Keep an omelet pan especially for omelets and see that it is kept clean and smooth.

**Foamy Omelet***Ingredients:*

2 eggs	2 tbsp. milk or water
$\frac{1}{4}$ tsp. salt	cayenne or white pepper
	1 tsp. butter

*Method:*

Beat yolks of eggs until light and creamy; add seasonings and milk. Beat the whites until stiff, but not dry; cut into yolks. Heat an omelet pan, rub it with butter, pour in the mixture and spread it evenly on the pan. Cook over low flame. When set, put in hot oven for a few minutes to dry on top. Fold and serve at once.

**French Omelet**

4 eggs	$\frac{1}{8}$ tsp. pepper
4 tbsp. milk	$\frac{1}{2}$ tsp. salt
	2 tsp. butter

*Method:*

Beat eggs slightly, enough to blend yolks and whites. Add milk and seasonings. Put butter in hot omelet pan; when melted, pour in mixture and place over a low flame. As it cooks draw the edges toward the center with a knife until the whole is of a creamy consistency. Place on hotter part of range that it may brown quickly. Fold and turn on hot platter.

*Additions:*

Grated cheese, jelly, jam, chopped meats, peas, or parsley placed in omelet before folding, or a highly seasoned tomato sauce may be served around it.

**Egg-in-Nest**

Arrange stiffly beaten white of an egg on a slice of buttered toast. Make a depression in the center and drop in the unbeaten yolk. Sprinkle with salt. Brown in a moderate oven.

**Scrambled Eggs with Tomato Sauce***Ingredients:*

6 eggs	4 tbsp. butter
1 $\frac{3}{4}$ c. tomatoes	1 slice onion
2 tbsp. sugar	$\frac{1}{2}$ tsp. salt
$\frac{1}{8}$ tsp. pepper	

*Method:*

Simmer tomatoes and sugar five minutes; brown butter and onion three minutes; remove onion and add tomatoes, seasonings, and eggs slightly beaten. Cook as scrambled eggs.

**Eggs à la Goldenrod***Ingredients:*

3 hard-cooked eggs	$\frac{1}{2}$ tsp. salt
1 tbsp. butter	$\frac{1}{8}$ tsp. pepper
1 tbsp. flour	5 slices toast
1 c. milk	parsley

*Method:*

Make a thin white sauce with butter, flour, milk, and seasonings. Remove yolks from hard-cooked eggs. Chop whites finely and add to the sauce. Cut four slices of toast in halves lengthwise; arrange on platter, and pour over the sauce. Force the yolks through a potato ricer or strainer, and sprinkle them over the top. Garnish with parsley and remaining toast cut in points.

**"Liquid Glass" for Preserving Eggs***Ingredients:*

- 1 qt. "liquid glass" (a concentrated commercial solution of sodium silicate).
- 9 qts. boiled and cooled water.

*Method:*

Mix the liquid glass and boiled water in a clean crock or stone jar. Carefully wipe strictly fresh eggs and with a spoon or other convenient utensil place the eggs in the crock. The crock may be filled with eggs to the point of the liquid just covering the top layer.



Cover the crock with tin cover or stone cover. It does not need to be air-tight. When removing eggs from the crock, do so with a spoon. Wash them carefully and, if they are to be boiled, prick the shell. The pores of the shell are filled with the liquid glass and as the air and water within the shell expand with the heat, the shell is likely to explode and thus spoil the egg as a "hard-cooked" product.

## FOOD VALUE

## Scrambled Egg

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Egg . . . . .	1	45.	6.03	4.72		67	.0366	.039	.157	.0012
Milk . . . . .	1 <sup>3</sup> / <sub>5</sub> tbsp.	22.	.72	.88	1.09	15	.0022	.034	.045	.0001
Butter . . . . .	<sup>2</sup> / <sub>5</sub> tbsp.	7.8	.07	6.63		60	.0045	.0018	.0024	
Salt . . . . .										
Pepper . . . . .										
Total, cooked . .	<sup>3</sup> / <sub>5</sub> c.	61.2	6.82	12.22	1.09	142	.0433	.0748	.2044	.0013
100-Calorie Portion <sup>1</sup>	<sup>1</sup> / <sub>4</sub> c.	42.8	4.77	8.55	.76	100	.03	.0523	.143	.0008

## SOUFFLÉS

Soufflés are combinations of cooked or uncooked mixtures and stiffly beaten whites of eggs baked in a moderate oven. They should be served immediately. A sauce improves fruit soufflés.

Whips are the same combinations unbaked and piled lightly in glasses for serving.

## Essentials for Successful Soufflés

Good eggs.

Stiffly beaten whites.

Buttered molds, — buttered and sugared for fruit soufflés.

Very moderate oven.

<sup>1</sup> Also called Standard Portion (S. P.).

**Soufflés***Varieties:*

- I. Made with a white sauce:
  - a. Meat, fish, rice, cheese.
  - b. Custard.
- II. Made without a white sauce:
  - a. Vegetable.
  - b. Fruit.

**Fruit Soufflé***Ingredients:*

$\frac{3}{4}$ c. pulp sweetened	3 egg whites
	salt

*Method:*

Fresh, dried, or canned fruit may be used. Drain sirup from canned fruit. Press pulp through a strainer and add to the stiffly beaten whites. Use a Dover beater and continue beating until very light. Place in buttered, sugared molds in pan of warm water. Bake in a moderate oven until firm.

**Custard Soufflé***Ingredients:*

3 tbsp. butter	1 c. scalded milk
$\frac{1}{4}$ c. flour	4 eggs
$\frac{1}{4}$ c. sugar	1 tsp. vanilla

*Method:*

Melt butter, add flour, and gradually hot milk; when well thickened pour on yolks of eggs beaten until thick and lemon-colored, and mixed with sugar; cool, and cut and fold in whites of eggs beaten stiff and dry. Turn into buttered pudding dish, place in a pan of warm water, and bake in a moderate oven until firm.

**Lemon Soufflé***Ingredients:*

Yolks 4 eggs	1 c. sugar
Grated rind and juice 1 lemon	whites 4 eggs

*Method:*

Beat yolks until thick and lemon-colored, add sugar gradually and continue beating, add the lemon rind and juice. Cut and fold in whites of eggs beaten until dry. Bake as Custard Soufflé.

**Vegetable Soufflé**

Wash, peel, and mash vegetables as in preparing mashed potatoes. Moisten with milk or cream. Fold in the beaten yolks and stiffly beaten whites. Bake as Custard Soufflé.

**Corn and Cheese Soufflé***Ingredients:*

1 tbsp. butter	1 c. chopped corn
1 tbsp. chopped green pepper	1 c. grated cheese
$\frac{1}{4}$ c. flour	3 eggs
2 c. milk	$\frac{1}{2}$ tsp. salt

*Method:*

Melt the butter and heat the pepper in it for 2 minutes. Add the flour, and stir the milk in slowly. When the white sauce is thickened, add the corn, cheese, yolks of eggs, and seasonings. Cut and fold in the stiffly beaten whites of eggs. Bake as Custard Soufflé.

**Meat Soufflé***Ingredients:*

1 c. thick white sauce	$\frac{1}{2}$ -1 c. cooked meat, poultry,
1-3 eggs	or fish

*Method:*

Mix meat with warm sauce. Season highly. Cool and fold in stiffly beaten yolks and stiffly beaten whites. Bake as Custard Soufflé.

**Cheese Soufflé***Ingredients:*

2 tbsp. butter	few grains cayenne
3 tbsp. flour	$\frac{1}{4}$ c. grated Old English or
$\frac{1}{2}$ c. scalded milk	Young America cheese
$\frac{1}{2}$ tsp. salt	yolks 3 eggs
	whites 3 eggs

*Method:*

Melt butter, add flour, and, when well mixed, add scalded milk gradually. Then add salt, cayenne, and cheese. Remove from fire. Add yolks of eggs beaten until lemon-colored. Cool mixture and cut and fold in whites of eggs beaten until stiff and dry. Bake as Custard Soufflé.

## EXPERIMENTS WITH DEEP FAT FRYING

**122.** — *a.* Prepare potato chips by the following methods:

Raw potato sliced very thin.

Parboil potato and slice very thin.

Raw potato soaked in ice water 20 minutes.

Raw potato soaked in salt solution (2 tsp. salt to 2 c. ice water) 20 minutes.

In each case dry the potato carefully before immersing in the fat or oil.

*b.* Prepare deep fat, using the following fats and oils:

lard	cottonseed oil
crisco	peanut oil
olive oil	corn oil

Arrange utensils and fats and oils so that the heating may begin at the same time. Note initial temperatures and length of time required for the medium to reach the proper temperatures for deep fat frying. Test constantly with a slice of raw unsoaked potato, and when each has reached the required temperature fry samples of the potato prepared in *a* separately in each medium. Note the temperatures of each fat or oil, the length of time required for frying each potato, and the character of the product.

**123.** — If a thermometer of sufficient range is available, determine the temperature at which each of the above fats shows evidence of being decomposed by heat. What is the evidence in each case?

In a recent study by Blunt and Feeney (*Journal of Home Economics*, Vol. VII, page 535) the temperatures at which certain fats begin to give off visible fumes are reported as follows:

Cottonseed oil (Wesson)	233° C.
Snowdrift	232° C.
Crisco	231° C.
Leaf lard	221° C.
Butter fat	208° C.
Leaf lard (heated 5 hours)	207° C.
Bulk lard	194° C.
A much-used lard	190° C.
Olive oil	175° C.
Peanut oil I	162° C.
Peanut oil II	149° C.
Coconut oil	136° C.

How do your results compare with these? Where results differ, is the difference attributable to differing conditions of experimentation or to variation in the material tested?

**124.** — *a.* Prepare doughnuts, using the recipe in the book. Roll them to uniform thickness and cut with the same cutter.

*b.* Arrange the following fats and oils in utensils of uniform size and shape and begin heating at the same time:

Fats:

lard	olive oil
$\frac{1}{2}$ lard, $\frac{1}{2}$ crisco	peanut oil
crisco	corn oil
beef drippings	mutton drippings

*c.* Note the initial temperatures of each fat or oil, and testing constantly with the doughnut mixture, find the proper temperature for each medium for an uncooked flour mixture.

*d.* Fry doughnuts in each fat and oil. Note the flavor of the product, the amount of fat absorbed, the color. Allow samples of each cooked doughnut to remain in a tin box and note the rapidity with which each becomes dry and hard.

**125.** — *a.* Prepare rice croquettes. Shape croquettes, using approximately the same amount of mixture in each croquette, measuring in level tablespoons. Fry croquettes in each of the above fats and oils immediately after using them for doughnuts. Note the

flavor of the croquettes, the absorption of odor of doughnuts, the color, crispness of the crust.

*b.* Summarize your conclusions as to the appropriateness of each fat or oil as a frying medium.

**126.** — Using the optimum temperatures for frying for each fat or oil, test the frying of a piece of bread. Note the number of seconds required by each fat to brown the bread. Does it prove the usual statement, “40 seconds required for browning a piece of bread is sufficient for browning a cooked mixture — as croquettes; 60 seconds is required for cooking and browning an uncooked mixture”?

**127.** — Cut up in small pieces, weigh, and sauter equal quantities of boiled potato in unit quantities of each of the fats and oils. Weigh again and determine which fat is most easily absorbed by the potato.

**128.** — From your correlated reading and experiments what do you conclude as to the wholesomeness of deep fat frying or sautéing of food as a method of cooking?

### Croquettes

Croquettes are made with a base of meat, fish, egg, cheese, nuts, rice, beans, or other vegetables. These need to be combined with either white sauce, egg, starchy vegetables as potato, rice, cereals, or crumbs.

#### *The crumbs:*

Use crumbs from outside of loaf for first coating, use crumbs from inside of loaf for second coating.

Season crumbs before using.

Cracker crumbs are not desirable as they give a “pasty” crust.

#### *The egg:*

The whole egg is preferable. Add water equal to volume of egg. Beat slightly.

If white alone is used, add to each white  $\frac{1}{4}$  tbsp. oil,  $\frac{1}{4}$  tbsp. water.

If yolk is used alone, add  $\frac{1}{4}$  tbsp. cold water to each yolk.

NOTE: The white alone gives a tough crust; the yolk gives a tender crust.

*The fat for frying:*

The fat should be unburned lard, or crisco, free from particles of previous frying.

Use a flat-bottom frying kettle, keep an iron gas spreader over the gas jet, and do not allow fat to bubble to rim of kettle.

Test fat, timing the browning of a piece of bread. Fry croquettes made with previously cooked mixtures about 40 seconds. Fry croquettes made with uncooked mixture 60 seconds.

Drain croquettes on absorbent brown paper. Croquettes may be reheated in the oven or double boiler.

**Rice Croquettes***Ingredients:*

$\frac{1}{2}$ c. rice	$\frac{1}{2}$ tsp. salt
2-3 tbsp. milk	$\frac{1}{8}$ tsp. pepper
1 egg	cayenne
2 tbsp. butter	2 tbsp. chopped parsley

*Method:*

Boil rice. Add milk, butter, seasonings, and beaten egg. Cook in a double boiler and cool. Form into balls, roll in sifted crumbs, shape, dip in egg, and reshape. Chill. Fry in deep fat.

**Potato Croquettes***Ingredients:*

2 c. hot riced potatoes	cayenne
2 tbsp. butter	few drops onion juice
$\frac{1}{2}$ tsp. salt	yolk 1 egg
$\frac{1}{8}$ tsp. pepper	1 tsp. finely chopped parsley
$\frac{1}{4}$ tsp. celery salt	milk if necessary

*Method:*

Add ingredients in order given to the potatoes.

Proceed as for Rice Croquettes.

**Cheese Croquettes***Ingredients:*

3 tbsp. butter	1 c. cheese cut in small cubes
$\frac{1}{4}$ c. flour	$\frac{1}{2}$ c. grated Parmesan cheese
$\frac{2}{3}$ c. milk.	$\frac{1}{4}$ tsp. salt
yolks 2 eggs	paprika

*Method:*

Make a white sauce of flour, butter, seasonings, and milk. Add beaten yolks and cheese. Cool. Proceed as for Rice Croquettes.

**Nut and Raisin Croquettes***Ingredients:*

1 c. stale bread crumbs	2 egg yolks
$\frac{1}{2}$ c. milk	salt
1 c. chopped nut meats	pepper
1 c. chopped raisins	

*Method:*

Soak bread in milk until soft. Add nuts, seasonings, beaten yolks, and raisins. Proceed as for Rice Croquettes.

**Chicken Croquettes***Ingredients:*

$3\frac{1}{2}$ c. chopped chicken	1 tbsp. parsley
onion juice	2 tsp. lemon juice

Make 1 pt. of very thick cream sauce:

1 pt. cream and milk	$1\frac{1}{2}$ tsp. salt
$\frac{1}{4}$ c. butter	$\frac{1}{2}$ tsp. white pepper
$\frac{1}{2}$ c. flour	1 tsp. celery salt
	cayenne

*Method:*

Add the sauce to the chopped chicken and seasonings. Cool. Proceed as for Rice Croquettes.





## REFERENCES

*Eggs*

- ATWATER and BRYANT. Composition of American Food Materials. United States Department of Agriculture, Office of Experiment Stations, Bulletin 28.
- BARROWS. Eggs: Facts and Fancies Compiled about Them. Demonstrations. Eggs and Milk. Iowa State College of Agriculture, Extension Department, Short Course Class Notes, No. 4.
- LANGWORTHY. Eggs and their Uses as Food. United States Department of Agriculture, Farmers' Bulletin 128.
- LEACH. Food Inspection and Analysis.
- MAURER. Bacteriological Studies on Eggs. Kansas State Agricultural College Experiment Station, Bulletin 180 (1911).
- REMINGTON. A Study of Commercial Eggs. United States Department of Agriculture, Bulletin 51 (1914).
- SHERMAN. Food Products.
- THOMPSON. Studies in Egg Marketing. University of Minnesota, Agricultural Experiment Station, Bulletin 132 (1913).
- TIBBLES. Foods: Their Origin, Composition and Manufacture.
- WILEY. Foods and their Adulteration.

*Cooking in Fats*

- BLUNT and FEENEY. The Smoking Temperatures of Edible Fats. Journal of Home Economics, vol. VII, page 535 (December, 1915).

## CHAPTER IX

### MEATS, STOCK SOUPS, AND GELATIN

MEATS are derived from the flesh of domestic and wild animals chiefly if not exclusively of herbivorous habits, and from fowls. The most important kinds are beef (ox), veal (calf), mutton (sheep), lamb (young sheep), pork (pig), ham and bacon (pig), venison (deer). Poultry includes chickens, turkeys, ducks and geese, guinea hens, and game birds.

The quality of meat is dependent on the condition of the animal from which it is derived. Of all the foods, meat is the one most subject to conditions rendering it unwholesome or even dangerous. Certain diseases of animals are communicable to man through eating of the flesh, and there is danger that through lack of cleanliness in slaughterhouses and exposure to dust and flies, meat may be infected with *Bacillus enteritidis* which produces poisonous products which are not destroyed by cooking and which are now considered to be the commonest cause of food poisoning — so-called "ptomaine" poisoning.

The United States Department of Agriculture, under the meat inspection law of 1906, provides for the inspection of establishments which send products into foreign or interstate commerce. There are, however, many establishments which do business entirely within one state and they may or may not have local inspection. For the need of state inspection see United States Department of Agriculture, Bureau of Animal Industry, Circular 154 (1908).

In meat as it is purchased we have bone, fat, and the flesh, consisting of the muscle of the animal with its connective tissue.

The color of the meat should be clear and bright, not purplish. There should be very little odor, and the meat should be firm and elastic to the touch.

Meat is valuable chiefly for its protein, fat, and ash constituents. The protoplasm of the muscle cells consists mainly of proteins partially dissolved in 3 to 4 times their weight of water. The fat is deposited partly in the cells and partly in the connective tissue between the cells, where it forms in layers. Fat does not alter the composition of the actual protoplasm since it neither dissolves in nor absorbs water. When an animal is killed, the muscular protoplasm coagulates (rigor mortis), but without essential change in the amount or distribution of moisture, protein, or fat. Muscle protein and gelatin differ conspicuously in their content of amino acids. It is now known that the inadequacy of gelatin alone as protein food is due to the absence of certain amino-acid radicles, particularly tryptophan and tyrosin. Special interest attaches to the "extractives" of meat, to which its flavor is largely due, and to the purins which give rise to uric acid in the body. Among the extractives creatin is most conspicuous. The purins exist "free" (as in the form of hypoxanthin, adenin, guanin) and "bound" as constituents of the nucleoproteins.

Cold storage, drying, canning, and the application of preservative substances are the principal means of preserving meats. Salt, sugar, vinegar, and wood smoke are condimental as well as preservative in their properties, and there is no restriction upon their use. Saltpeter maintains the red color of meat and preserves it. Boric acid and borax, which when used are employed purely for their preservative effect, and sulphites are not permitted under the present United States meat inspection law.

For fuller discussion of composition, nutritive value, preservation and inspection of meat, read Sherman's *Food Products*, Chapters VI and VII.

## MEAT EXPERIMENTS

**129.** — Examine a shin of beef for fat, connective tissue, tendons, ligaments, blood vessels (veins and arteries), bone tissue, and muscles.

Prepare round steak for the following experiments by grinding through meat grinder.

**130.** — *a.* Mix 2 tbsp. meat and 1 c. cold water. Let stand 1 hour.

*b.* Mix 2 tbsp. meat and 1 c. cold water and  $\frac{1}{2}$  tsp. salt. Let stand 1 hour.

*c.* Mix 2 tbsp. meat and 1 c. cold water and 1 tbsp. vinegar. Let stand 1 hour.

*d.* Mix 2 tbsp. meat and 1 c. warm water and  $\frac{1}{2}$  tsp. salt. Let stand 1 hour.

*e.* Mix 2 tbsp. meat and 1 c. boiling water. Boil 1 minute. and let stand 1 hour. Compare results. In which instances is most color and flavor extracted? Explain these phenomena.

**131.** — Remove as much muscle and fat as possible from a shoulder of veal. Crack the bone in several places. Place in cold water to cover, adding  $\frac{1}{2}$  tsp. salt to each pint of water and let simmer for 6 hours. Remove the bone, strain the liquid through a wet cheesecloth, and put in a cold place to cool. Let the stock remain in ice box overnight and then observe change in consistency. (Keep for Expt. **132.**)

*a.* Note the layer of fat on surface covering the jelly underneath. Could the small amount of fatty tissue left on the bone have furnished enough fat to form such a layer?

*b.* What was the source of the fat?

**132.** — To a small portion of the jelly from Expt. **131** apply the following tests:

*a.* Biuret, page 85.

*b.* Xanthoproteic, page 85.

*c.* Fehling-Benedict, page 13.

*d.* Iodine, page 13.

**133.** — Note the color and flavor of the jelly. Why is it lighter colored and lacking in flavor? What kind of meat is added to soup stock for color and flavor? Why?

**134.** — Rub a piece of tough round steak with a small amount of baking soda. Allow it to stand  $\frac{1}{2}$  hour and then pan-broil. Repeat, using vinegar or lemon juice. Broil. Compare as to flavor, texture, ease of cutting with silver knife, and mastication. How do you account for the differences observed?

**135.** — Again prepare pieces of steak, A and B, as in Expt. **134**. Put A in a hot frying pan, B in a cold frying pan. Turn each as soon as seared on one side. Compare as to texture, flavor, and amount of gravy left in pan.

Conclusions.

**136.** — Cut bacon into slices A, B, and C—

A cut very thin	} weigh each
B cut moderately thin	
C cut thick	

Fry each to the following stages: rare, medium, and crisp. Weigh the amount of fat left in pan in each case. How much is lost?

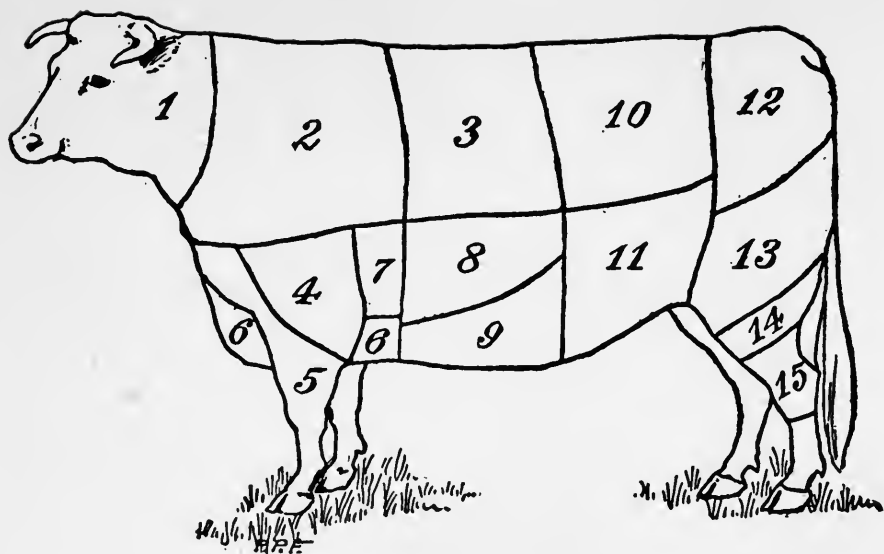
**137.** — Use slices cut as in A, B, C. Broil and compare with products in Expt. **136**. Which method of preparing bacon is best? Why?

**138.** — *a.* Prepare a meat stew in both the pressure and fireless cooker.

*b.* Compare the thoroughness of cooking, length of time required, flavor.

*c.* Compute the saving in time, labor, and fuel. Note the temperature of each cooker.

*d.* What are the advantages of the pressure and the fireless cookers over the coal or gas stove?



1. Neck.
2. Chuck.
3. Ribs.
4. Shoulder clod.
5. Fore shank.
6. Brisket.
7. Cross ribs.
8. Plate.
9. Navel.
10. Loin.
11. Flank.
12. Rump.
13. Round.
14. Second cut round.
15. Hind shank.

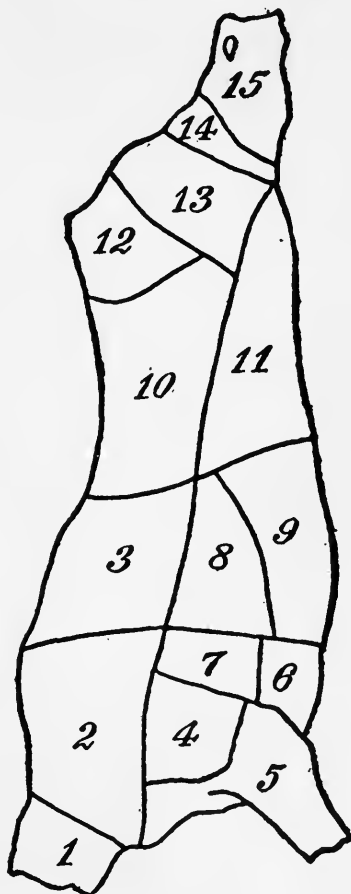
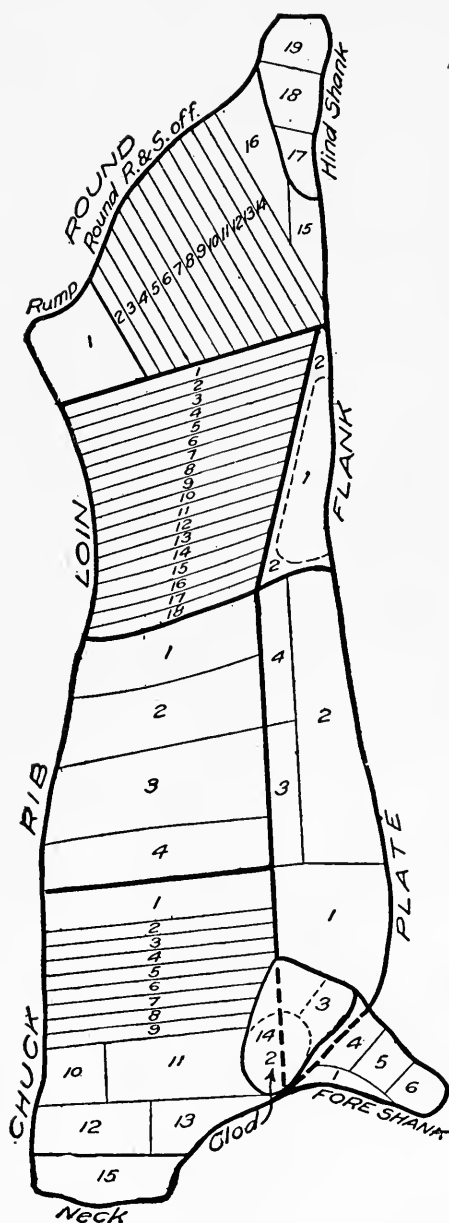


FIGURE 1. — Cuts of Beef (U. S. Dept. Agriculture).



## HIND QUARTER

### ROUND

#### Rump

1 Rump

Round; rump & shank off.

2 Round steak, first cut.

3-13 Round steaks.

14 Round steak, last cut.

15 Knuckle soup bone.

16 Pot roast.

Hind shank.

17, 18 Soup bones.

19 Hock soup bone.

### LOIN

1 Butt-end sirloin steak.

2 Wedge-bone sirloin steak.

3, 4 Round-bone sirloin steak.

5, 6 Double-bone sirloin steak.

7 Hip-bone sirloin steak.

8 Hip-bone porterhouse steak.

9-15 Regular porterhouse steak.

16-18 Club steaks.

### FLANK

1 Flank steak.

2 Stew.

## FORE QUARTER

### RIB

1 11th & 12th Rib roast.

2 9th & 10th Rib roast.

3 7th & 8th Rib roast.

4 6th Rib roast.

### CHUCK

1 5th Rib roast.

2-9 Chuck steaks.

10-13 Pot roasts.

14 Clod.

15 Neck.

### PLATE

1 Brisket.

2 Navel.

3, 4 Rib ends.

### FORE SHANK

1 Stew.

2 Knuckle soup bone.

3-6 Soup bones.

FIGURE 2. — Side of Beef (U. S. Dept. Agriculture).



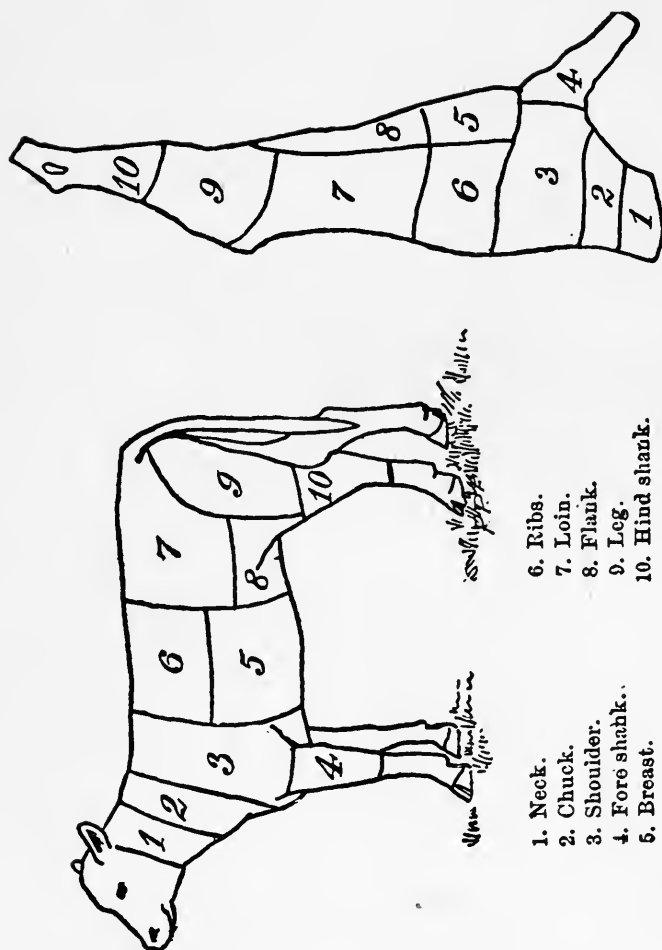
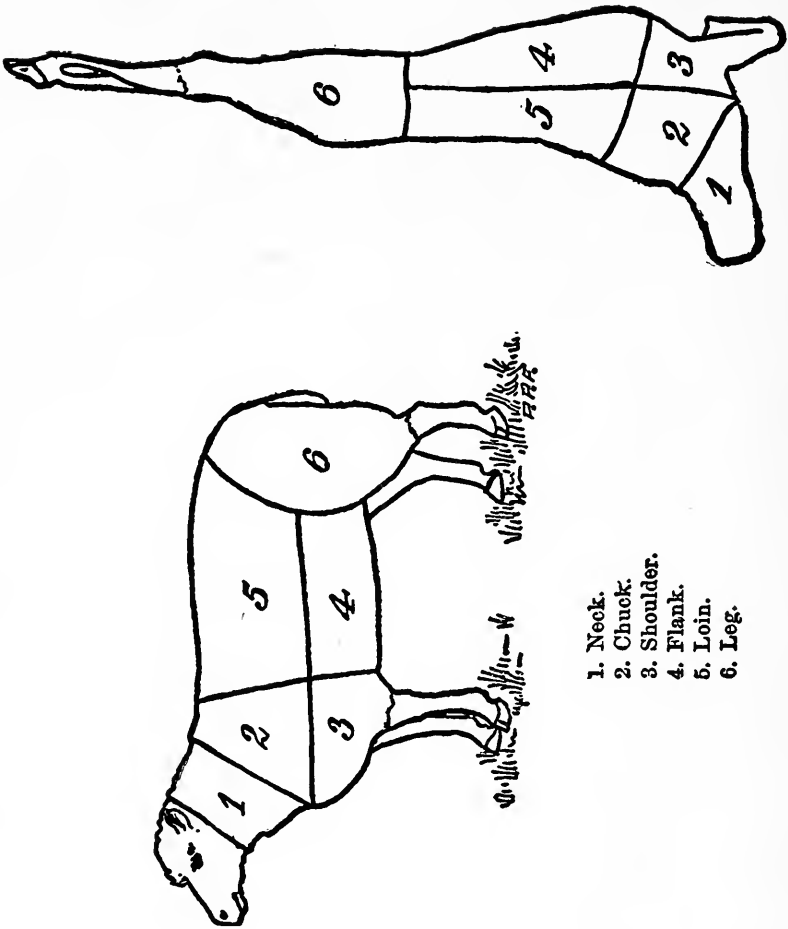
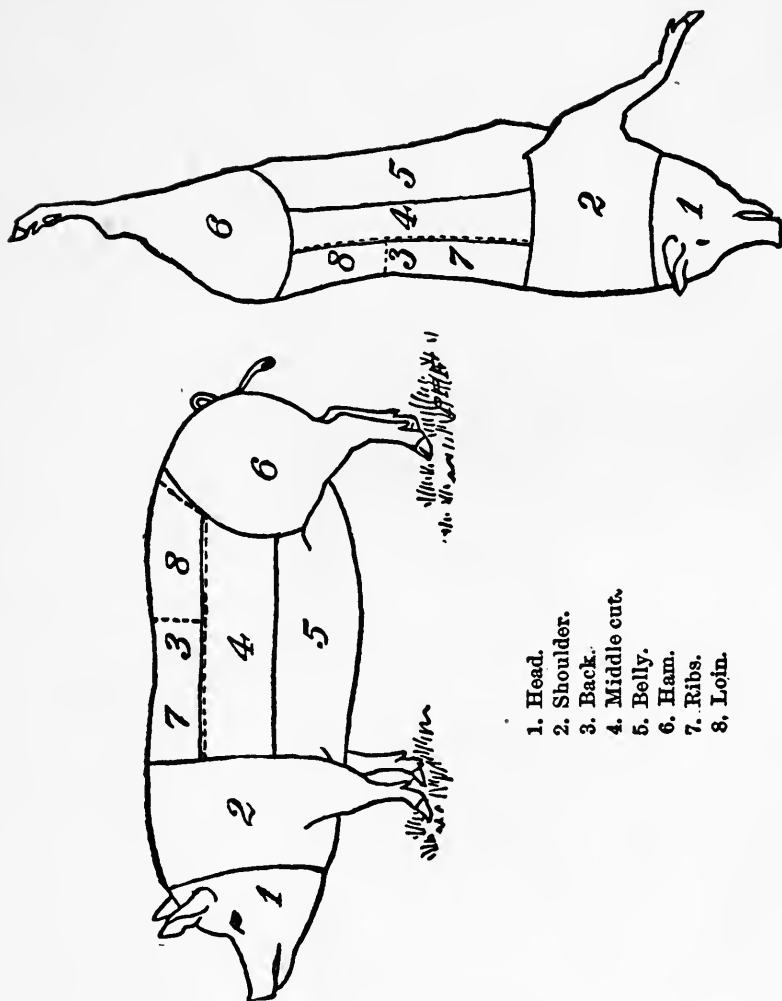


FIGURE 3. — Cuts of Veal (U. S. Dept. Agriculture).



- 1. Neck.
- 2. Chuck.
- 3. Shoulder.
- 4. Flank.
- 5. Loin.
- 6. Leg.

FIGURE 4.—Cuts of Lamb and Mutton (U. S. Dept. Agriculture).



1. Head.
2. Shoulder.
3. Back.
4. Middle cut.
5. Belly.
6. Ham.
7. Ribs.
8. Loin.

FIGURE 5.—Cuts of Pork (U. S. Dept. Agriculture).

## SOUPS

Soups may be divided into two main classes, meat soups and vegetable soups. Those made from meat obtain their flavor from extractives which are stimulating, but have almost no food value. Vegetable soups usually have a higher nutritive value, since the pulp of vegetables used as flavoring or thickening is commonly served as a part of the soup.

## Stock Soups

Stock soups are made from beef, veal, mutton, fish, or poultry separately or in combination. Left-overs, meats or vegetables, may be used alone or with fresh meats to make stock. They often improve stock by imparting delicious new flavors.

*Bouillon*, lean beef; delicately seasoned, usually cleared.

*Consommé*, two or three kinds of meat; highly seasoned, always cleared.

*Brown stock*, beef; highly seasoned with vegetables, spices, and herbs.

*White stock*, veal or chicken; delicately seasoned.

*Old-fashioned stock*, thickened with vegetables. Some fat remains in this soup.

## Soup Accompaniments

Flour pastes, plain and fancy	Croûtons
Vegetables, cut in plain and fancy shapes	Cooked cereals
Fritter batter, forced through a strainer and fried	Royal custard

## Other Uses for Soup Stock

Gravies	Sauces
Seasoning for meats	Aspic jelly
Preparation of combination soups as Creole, Mongole	

Meat left from soup making is tasteless, but contains about as much protein as fresh meat. It may be seasoned, mixed with a sauce and made into the following "Left-over" dishes:

Croquettes	Hash	Creamed on toast
Minced on toast	Soufflé	Scalloped
Meat pie	Cottage pie	Casserole with vegetables
Warmed in gravy	Salad	or rice

**Brown Soup Stock***Ingredients:*

6 lbs. shin of beef ( $\frac{2}{3}$ lean meat, $\frac{1}{3}$ bone and fat)	3 sprigs thyme
3 qts. cold water	2 sprigs parsley
$\frac{1}{2}$ tsp. peppercorns	carrot
6 cloves	turnip
$\frac{1}{2}$ bay leaf	onion
	celery
	1 sprig marjoram

*Method:*

Wipe beef and cut the lean meat in inch cubes. Brown  $\frac{1}{3}$  of meat in marrow from bone. Add the water to the remaining  $\frac{2}{3}$  meat, the bone and fat, and let stand 30 minutes. Add browned meat and heat gradually to boiling point. Remove scum as it rises. Cover and simmer 6 hours. Add vegetables and seasonings. Simmer  $1\frac{1}{2}$  hours longer; strain and cool as quickly as possible.

**To Clear Soup Stock***Method:*

Remove fat from stock while cold. Allow white and shell of 1 egg to 1 qt. stock. Beat white slightly, break shell in small pieces and add to stock. Boil 2 minutes. Remove scum and strain through double thickness of cheesecloth. If more seasonings are necessary, add as soon as stock has lost its jelly-like consistency.

**Chicken Soup***Ingredients:*

$1\frac{1}{2}$ qts. chicken stock	2 tbsp. rice
$\frac{1}{2}$ bay leaf	2 tbsp. noodles
$\frac{1}{4}$ tsp. peppercorns	2 tbsp. vermicelli

*Method:*

Simmer stock and seasonings  $\frac{1}{2}$  hour. Strain. Add the rice and flour pastes, previously cooked in 2 c. boiling water in a double boiler.

**Vegetable Soup***Ingredients :*

1 c. cubed carrots	3 qts. water
1 c. cubed turnips	$\frac{1}{2}$ c. butter
1 c. cubed celery	2 tbsp. flour
2 c. cubed potatoes	1 tbsp. parsley
1 c. chopped onions	1 tbsp. salt
	$\frac{1}{2}$ tsp. pepper

*Method :*

Cook all the vegetables except potato and onion in 6 tbsp. of butter 10 minutes. Add the potato and cook 2 minutes, the onion and water and cook  $\frac{1}{2}$  hour. Mix 2 tbsp. of butter with the flour and add the first mixture slowly and the seasonings. Cook  $\frac{1}{2}$  hour longer and add the parsley.

**Mongole Soup***Ingredients :*

1 qt. brown stock	10 allspice berries
1 qt. tomatoes	6 cloves
$\frac{1}{4}$ onion sliced	$\frac{1}{4}$ bay leaf
1 sprig parsley	$\frac{1}{4}$ tsp. celery salt
$\frac{1}{4}$ c. butter	$\frac{1}{4}$ tbsp. Worcestershire sauce
$\frac{1}{4}$ c. flour	$\frac{1}{2}$ tbsp. vinegar

*Method :*

Cook stock, tomatoes, onion, parsley, spices for 30 minutes. Brown butter, add flour and, gradually, the above mixture. Bring to the boiling point. Strain, add Worcestershire sauce and vinegar.

**Creole Soup***Ingredients :*

1 qt. brown stock	salt
1 pt. tomatoes	pepper
3 tbsp. chopped green peppers	cayenne
2 tbsp. chopped onion	2 tbsp. grated horseradish
$\frac{1}{4}$ c. butter	1 tsp. vinegar
$\frac{1}{3}$ c. flour	$\frac{1}{4}$ c. macaroni rings

*Method :*

Cook pepper and onion in butter 5 minutes. Add flour, stock, tomatoes. Simmer 15 minutes. Strain, rub through a sieve and season highly with salt, pepper, and cayenne. Just before serving, add horseradish, vinegar, and macaroni previously cooked and cut in rings.

## MEATS

## TENDER CUTS

## Roasting

Wipe, trim, tie, or skewer meat into shape. Place on a rack in a pan and place pieces of fat from the meat over it. Rub meat over with salt and dredge meat and pan with flour.

Place in the hottest part of oven to sear the outside and brown the flour; then remove to a lower shelf and reduce the temperature; baste meat every ten minutes until done, unless a covered roaster is used.

## Time-table for Roasting

Beef — rare . . . . .	8-10 minutes per lb.
Mutton . . . . .	15 minutes per lb.
Veal . . . . .	20 minutes per lb.
Pork . . . . .	30 minutes per lb.
Chicken . . . . .	until joints separate easily
Turkey — 10 lbs. . . . .	3 hours

## Fillet of Beef I

The tenderloin of beef is known as the fillet.

Trim into shape a fillet of beef weighing about four pounds, removing tendinous portions and veins. Tie and skewer this into a pear-shaped piece. Lard the top, sprinkle with salt and pepper, and dredge with flour. Cover the bottom of a small dripping pan with cubes of salt pork. Set a trivet on top of pork, and place the meat on the trivet; allow the meat to roast from 20-30 minutes in hot oven, basting it frequently.

Serve with gravy made from fat in pan, flour, and hot water.

**Fillet of Beef II***Ingredients:*

1 fillet of beef	1 stalk of celery
1 small onion	4 cloves
1 small carrot	2 bay leaves

*Method:*

Remove all the membranes and excess of fat from the fillet. Cut strips of larding pork 3 inches long,  $\frac{1}{8}$  inch wide, and  $\frac{1}{8}$  inch thick. Chill the strips in ice water. Lard the upper side of the fillet, slice the onion, carrot, and celery and place them with the cloves and bay leaves in the bottom of the pan. Place the fillet on the vegetables, season with salt and pepper, and cover with pieces of butter. Dissolve 1 tsp. salt in  $\frac{1}{4}$  c. boiling water and pour into the pan. Roast in a hot oven for 30 minutes. Baste frequently. Serve with mushroom sauce, if desired.

**Stuffed Flank Steak or "Mock Duck"***Ingredients:*

1 flank or round steak	suet
	dressing (see below)

*Method:*

Wipe meat, spread with dressing, roll and tie, or skewer. Place suet on top and roast 1 hour, or until tender.

**Dressing for Flank Steak***Ingredients:*

2 c. bread crumbs	1 tsp. salt
2 tbsp. butter	$\frac{1}{8}$ tsp. pepper
1 tbsp. parsley	$\frac{1}{8}$ tsp. poultry seasoning
juice of $\frac{1}{2}$ onion if desired	

**Brown Gravy***Ingredients:*

2 c. boiling water or $\frac{1}{2}$ milk	$\frac{1}{4}$ c. flour
salt	$\frac{1}{4}$ c. fat
	pepper



*Method :*

Remove all but  $\frac{1}{4}$  c. of the fat from roasting pan. Place over fire, add flour and stir until well browned, then add water slowly; boil 5 minutes. Season and strain.

**Broiling**

Remove extra fat from meat. Grease the broiler with some of the fat. Place broiler close to flame to sear meat, then remove to lower part of broiling oven to finish cooking, turning often. Season with butter, salt, and pepper.

**Pan-Broiling**

Heat an iron pan very hot. Remove extra fat from steak or chops. Sear meat on both sides, then turn frequently until cooked as desired, using a knife and fork for turning. Five minutes is necessary for lamb chop or steak one inch thick. Season with butter, salt, and pepper.

**Broiled Lamb or Mutton Chop**

Wipe chops, remove superfluous fat, and place in a broiler greased with some of the mutton fat. In loin chops flank may be rolled and fastened with a small wooden skewer. Broil over a clear fire, turning every ten seconds for the first minute, that surface may be well seared, thus preventing escape of juices. After the first minute, turn occasionally until well cooked on both sides.

**Broiled Fillet of Beef**

Cut slices about two inches thick from fillet. Shape in circles. Place the circles on greased broiler and broil over hot coals from 4-6 minutes, turning them every 10 seconds. Serve on hot platter; garnish with slices of broiled tomato and brown mushroom sauce.

**Hamburg Steak***Ingredients :*

1 lb. round of beef	1 tsp. onion juice
1 tsp. salt	1 tbsp. butter
$\frac{1}{8}$ tsp. pepper	1 tbsp. parsley

*Method :*

Shape into cakes and pan-broil.

**Pan-Broiled Chops**

Chops for pan-broiling should have flank and most of fat removed. Wipe chops and put in a hissing, hot frying pan. Sear on both sides, then turn frequently until cooked as desired. Drain on brown paper, put on hot platter and spread with small amount of butter and seasonings.

**Breaded Mutton Cutlets***Ingredients :*

8 Frenched chops, cut thin	$\frac{1}{2}$ tsp. salt
1 tbsp. butter	$\frac{1}{8}$ tsp. pepper
4 tbsp. flour	1 c. cream
$\frac{1}{2}$ c. chopped ham	

*Method :*

Make a white sauce of the above ingredients. When thoroughly cooked add the finely chopped ham, mix thoroughly and set aside to cool. Broil the chops. Season each chop with salt and pepper, and cover on both sides with a layer of the sauce. Allow them to stand on a buttered plate until firm, then dip in egg and crumbs and fry in deep fat until brown. Serve with Cuban or tomato sauce.

**Veal Cutlets I**

Cut a slice from the leg or fillet of veal into pieces for serving. Dredge with salt, pepper, and flour; brown in bacon or salt pork fat. Remove from pan. Put 2 tablespoons of flour in the pan; let brown;

add  $1\frac{1}{2}$  cups of broth or water. When it boils, add the cutlets, cover and simmer  $\frac{3}{4}$  of an hour, or until the cutlets are tender.

### Veal Cutlets II

Use slices of veal from leg cut  $\frac{1}{2}$  inch thick. Wipe, remove bone and skin, then cut in pieces for serving. The long, irregularly-shaped pieces may be rolled and fastened with small wooden skewers. Dip in seasoned crumbs, egg and crumbs; place in a pan with butter, lard and water, cover and cook until tender in a moderate oven. 30 to 40 minutes is required.

### Veal Loaf

#### *Ingredients:*

3 lbs. lean veal (chopped)	2 tbsp. lemon juice
$\frac{1}{2}$ lb. salt pork (chopped)	1 tbsp. salt
6 crackers (ground)	$\frac{1}{2}$ tbsp. pepper
4 tbsp. cream	onion juice

#### *Method:*

Mix ingredients, pack in a bread pan, smooth evenly on top, brush with white of egg, and bake slowly three hours, basting with pork fat. Prick frequently while baking so that pork fat may be absorbed.

### Sweetbreads

Remove from paper as soon as received from market, plunge into cold water and allow to stand 1 hour. Drain. Place in boiling, salted water and add 1 tsp. lemon juice or vinegar. Cook slowly twenty minutes; again drain and plunge into cold water. Free from pipe and skin, salt if necessary, and serve as desired.

### Broiled Sweetbreads

Parboil and cut in halves crosswise. Sprinkle with salt and pepper, and broil 5 minutes. Serve with creamed butter to which has been added a little lemon juice.

**Creamed Sweetbreads***Ingredients:*

1 c. cream or rich milk	$\frac{1}{2}$ tsp. salt
2 tsp. butter	2 tbsps. flour

*Method:*

Parboil sweetbreads and cut into  $\frac{1}{2}$  inch cubes. Blend flour and a little cold milk to make a smooth mixture. Scald cream in double boiler, add the flour mixture and cook thoroughly. Just before serving, add the prepared sweetbreads, salt, and butter. Serve hot on toasted circles of bread and garnish with parsley, or use as a filling for Swedish Timbales or Croustades.

**Bacon I**

Place thin slices of bacon (from which the rind has been removed) closely together on a fine wire broiler; place broiler over dripping-pan and bake in a hot oven until bacon is crisp and brown, turning once. Drain on brown paper.

**Bacon II**

Remove rind from bacon and parboil until slightly puffed. Place in hot frying pan and fry until a light brown, turning often and removing fat from pan as it tries out. The bacon should be crisp and flaky.

**TOUGH CUTS****Pot Roast of Beef**

Select a piece of four to six pounds from the rump or round. Wipe with a dampened cloth and sear all of the surface in a hot frying pan. Place in saucepan, add 1 cup of boiling water, cover closely and cook slowly until very tender. Sprinkle with salt when nearly done. Add water if necessary, but only enough to keep meat from burning. Add water to make a gravy thickened with  $1\frac{1}{2}$  tsp. flour to 1 c. liquid.

**Beef Stew***Ingredients:*

3 lbs. round of beef	3 carrots
water to cover	1 onion
6 potatoes	salt
flour	pepper

NOTE: 1. Salt should be added in the proportion of  $\frac{1}{2}$  tsp.; pepper  $\frac{1}{8}$  tsp., and flour 4 tsp. to 1 qt. liquid. A fireless cooker is convenient for stews.

*Method:*

Cut beef in pieces, cover with water, bring to boiling point and simmer 3 hours, or until meat is tender. Add diced vegetables 1 hour before meat is cooked. Remove vegetables and meat and thicken the liquid. Boil 5 minutes and return meat and vegetables to the pan.

NOTE: 2. Serve with dumplings made like emergency biscuit with shortening omitted. Drop by spoonfuls on top of stew, cover, and steam until done, then cook three minutes uncovered.

**Beef Broth***Ingredients:*

$\frac{1}{2}$ lb. round of beef	1 c. cold water
salt	

*Method:*

Wipe meat, remove fat, and cut meat in pieces. Add cold water and let soak 15 minutes. Put in pan of cold water. Heat water slowly to 150 degrees F. Cook 2 hours. Strain and season. Reheat, skim off fat with spoon and paper. In reheating, be careful not to coagulate the albumin.

**Beef Juice**

Select a piece of meat from the rump or upper round. Wipe, remove fat, cut in pieces, heat in a double boiler until juice flows. Squeeze out the juice by means of a press, lemon squeezer, or potato ricer. Serve at once in a colored glass.

## • LEFT-OVER MEATS

**Meat Cakes***Ingredients :*

2 c. cold roast beef	1 egg
$\frac{1}{4}$ c. crumbs	2 tsp. melted butter
seasoning	

*Method :*

Shape into oval cakes and brown in butter.

**Meat Pie***Ingredients :*

2 c. chopped roast beef	1 c. mashed potatoes
gravy	seasoning

*Method :*

Combine ingredients except potatoes. Place in a buttered baking dish and cover with mashed potato. Brush with beaten egg. Bake until potatoes are slightly browned.

**Browned Hash***Ingredients :*

1 c. meat	4 tbsp. fat
2 c. mashed potatoes	salt and pepper
$\frac{1}{3}$ c. boiling water	onion juice
chopped parsley	

*Method :*

Put the mixture into a frying pan in which 1 tbsp. of fat has been heated. Spread smoothly; cook over moderate heat so it will brown slowly and not burn. Cook about one half hour and do not stir. Fold like an omelet.

The same mixture may be made into small cakes  $\frac{3}{4}$  inch thick and browned in the same way.

**Casserole of Rice and Meat***Ingredients:*

2 c. cooked lamb	1 tbsp. chopped parsley
1 tsp. salt	1 egg (may be omitted)
$\frac{1}{4}$ tsp. pepper	$\frac{1}{4}$ c. fine crumbs
$\frac{1}{4}$ tsp. onion juice	4 c. boiled rice
	stock

*Method:*

Season meat and mix with crumbs and beaten egg; add enough stock to make it pack easily. Line a mold with 3 c. rice, fill with the meat; cover with remainder of rice, cover tightly and steam 45 minutes. Serve with Cuban sauce.

**Casserole of Beef**

Cut cold roast beef and steak alone or in combination in 1 inch cubes; there should be one quart. Put in a casserole dish and add 2 c. brown sauce or roast beef gravy,  $\frac{1}{2}$  c. celery, and  $\frac{1}{2}$  c. carrots cut in cubes, 1 onion thinly sliced, 1 c. canned tomatoes, 1 tsp. Worcestershire sauce,  $\frac{1}{2}$  tsp. salt, and  $\frac{1}{8}$  tsp. pepper. Cover and bake one hour; then add 1 c. peas, beans, or mushrooms, canned or fresh, 1 c. potato balls, previously cooked in boiling salted water 10 minutes. Serve from casserole.

**Casserole of Veal***Ingredients:*

1 lb. veal	3 c. stock
3-4 small onions	1 small piece salt pork
$\frac{1}{2}$ c. cubed carrots	1 small piece suet
$\frac{1}{2}$ c. cubed onions	6 tbsp. flour
1 stalk celery	kitchen bouquet
8 potato balls	seasonings

*Method:*

Brown the vegetables and meat in tried-out salt pork. Make a brown sauce with flour and stock. Pour over the meat and vegetables in a casserole. Bake one hour.

**Soufflé of Lamb***Ingredients :*

2 c. lamb	1 tsp. kitchen bouquet
2 tbsp. butter	$\frac{1}{2}$ c. stock
3 tbsp. flour	1 c. cream or milk
$\frac{1}{2}$ tsp. salt	$\frac{1}{2}$ c. crumbs
cayenne	1 tsp. parsley
3 eggs	

*Method :*

Prepare sauce, add meat, crumbs, and seasonings. Add the well-beaten yolks, and fold in the stiffly beaten whites of eggs. Bake in moderate oven until light.

**Royal Scallop***Ingredients :*

$\frac{1}{4}$ lb. ham	3 tbsp. flour
3 hard-cooked eggs	3 tbsp. butter
parsley	1 pt. milk
2 c. buttered crumbs	

*Method :*

Scald a blade of mace with the milk, and strain. Make a white sauce of the butter, flour, and hot milk. Chop ham and eggs, add parsley and white sauce. Prepare as any scalloped dish. Bake in hot oven until crumbs are brown.

**MEAT SAUCES****Brown Sauce***Ingredients :*

1 tbsp. chopped onion	2 tbsp. butter
1 tbsp. chopped carrot	3 tbsp. flour
1 sprig parsley	$\frac{1}{4}$ tsp. salt
1 sprig thyme	$\frac{1}{4}$ tsp. pepper
piece bay leaf	1 c. brown stock

*Method :*

Cook the vegetables and herbs in the butter until brown; add the flour (an extra tbsp. is used as flour loses its thickening quality to



some extent when changed to dextrin) and brown. Add the stock gradually. Strain before using.

### Brown Mushroom Sauce

To 1 c. of brown sauce add  $\frac{1}{3}$  c. canned button mushrooms, whole or cut in halves. Fresh mushrooms must be cleaned, pulled, browned in butter or simmered in water until tender, before they are added to the sauce.

### Mushroom Sauce

#### *Ingredients :*

drippings from fillet	1 pt. stock
2 tsp. butter	1 pt. cooked mushrooms
4 tsp. flour	1 tsp. Worcestershire sauce
	salt and pepper

#### *Method :*

Heat the butter and drippings until brown, add the flour and then the stock gradually. Strain and add the mushrooms. Cook 5 minutes. Add Worcestershire sauce, salt, and pepper.

### Cuban Sauce I

#### *Ingredients :*

1 pt. tomatoes	$\frac{1}{2}$ tsp. salt
2 tbsps. sugar	$\frac{1}{4}$ c. flour
1 c. lamb stock	$\frac{1}{4}$ c. butter

#### *Method :*

Cook first two ingredients until tomatoes are soft, strain and add stock. Melt butter, add flour, and when browned add liquid gradually.

### Cuban Sauce II

#### *Ingredients :*

2 tbsps. chopped ham	1 $\frac{1}{2}$ c. stock
4 tbsps. flour	1 c. catsup
4 tbsps. butter	$\frac{1}{2}$ tsp. salt

#### *Method :*

Cook ham in the butter until browned. Proceed as for White Sauce.

**Horseradish Sauce***Ingredients :*

3 tbsp. grated horseradish	cayenne
1 tbsp. vinegar	$\frac{1}{4}$ c. cream (whipped)
$\frac{1}{4}$ tsp. salt	

*Method :*

Mix first four ingredients. Fold in the cream.

**Spanish Sauce for Steak***Ingredients :*

$\frac{1}{2}$ c. catsup	1 tsp. Worcestershire sauce
-------------------------	-----------------------------

*Method :*

Thicken with flour, add 1 c. mushrooms, and 1 tsp. horseradish.

**SCORE CARD****Roast of Meat**

<i>General appearance</i> . . . . .	30
Compactness . . . . .	(10)
Form . . . . .	(10)
Color . . . . .	(10)
<i>Meat</i> . . . . .	70
Flavor . . . . .	
Retained . . . . .	(25)
Seasoning . . . . .	(10)
Degree of Cooking . . . . .	(10)
Tenderness developed by Cooking . . . . .	(25)

---

 100
**GELATIN**

Commercial gelatin is obtained from the skin, ligaments, and bones of sound animals. Gelatins made in the kitchen are obtained from the tissues, ligaments, and bones of young animals or fowl. Gelatin as a food cannot meet the entire protein

requirement, since it is lacking certain animo-acid radicles, the most important being tryptophan, but this lack may be offset by using with gelatin other foods such as milk or cream whose proteins are rich in tryptophan. Gelatin is an excellent medium for using or disguising milk, eggs, or fruit and may thus play a very important part in the diet.

### GELATIN EXPERIMENTS

In these experiments gelatin used for desserts will be considered. See meat experiments, also.

**139.** — Have at hand samples of various gelatins. Use each gelatin as follows:

- a.* 1 tsp. gelatin and  $\frac{1}{4}$  c. hot water.
- b.* 1 tsp. gelatin and  $\frac{1}{4}$  c. boiling water.
- c.* 1 tsp. gelatin and  $\frac{1}{4}$  c. cold water.

In which is the gelatin most soluble?

Does it dissolve in cold water?

**140.** — Use one of the dissolved gelatins to make the following tests:

Biuret, page 85.

Xanthoproteic, page 85.

Fehling-Benedict, page 13.

Iodine, page 13.

Coagulation on boiling.

NOTE: It will hardly be necessary to test each gelatin for the above reactions.

**141.** — Make three solutions A, B, C, using non-acidulated gelatin (1 tsp. gelatin soaked in 1 tbsp. cold water, add  $\frac{1}{2}$  c. boiling water).

Boil A for 5 minutes. Set on ice in mold.

Boil B for 10 minutes. Set on ice in mold.

Boil C for 15 minutes. Set on ice in mold.

Which is most desirable? What has happened to the gelatin?

**142.** — Make four solutions, A, B, C, D, as in Expt. 141.

Put A on ice in mold.

To B add  $\frac{1}{4}$  c. lemon juice. Put on ice in mold.

To C, add 2 tbsp. fresh pineapple juice or 4 tbsp. pineapple pulp. Thoroughly mix and put on ice in mold.

To D add 2 tbsp. fresh pineapple juice which has been boiled for 2 minutes. Thoroughly mix and put on ice in mold.

What do you observe in B, C, D? How do you account for the failure of the gelatin to solidify in B and C?

Compare the consistency of A and D. How do you account for the delicacy of D? Beat D with a Dover egg beater until foamy. What gives it this appearance?

Have the class divided so that all brands of gelatins are used. Compare results.

Make a table showing the proper amount of: gelatin, liquid, fruit juice, sugar.

## GELATIN DESSERTS

### General Rules

Fill molds with cold water and let stand.

Soak gelatin in cold water to soften it.

Add the boiling liquid to the softened gelatin to dissolve it.

Add sugar to this mixture while hot to dissolve the sugar.

Strain fruit gelatins through a cheesecloth before cooling.

Cover gelatin mixtures while cooling to protect from dust.

### Varieties

1. Fruit jellies:
 

Lemon jelly	Mold after straining; when firm turn out on serving dish. Serve with soft custard or whipped cream.
Orange jelly	
2. Fruit jellies with white of egg:
 

Snow pudding; Sponges	Cool until sirupy. Add stiffly beaten egg white and beat until firm enough to mold.
-----------------------	---
3. Fruit jellies with cream:
 

Bavarian creams	Add whipped cream when sirupy.
-----------------	--------------------------------

4. Custard jellies : Add stiffly beaten white to custard jelly.  
     Spanish cream      After straining, beat occasionally while  
     Macaroon cream      cooling. Mold when begins to thicken.
5. Charlottes : Jellies with the whip from thin cream.  
                     Add the whip when the mixture begins  
                     to thicken.

### Fruit Jellies

<i>Ingredients:</i>	<i>Orange</i>	<i>Prune</i>	<i>Lemon</i>
Gelatin . . . . .	2 tbsp.	2½ tbsp.	2 tbsp.
Cold water . . . . .	½ c.	½ c.	½ c.
Boiling liquid . . . . .	1½ c. water	½ lb. prunes and liquid to make 2 c.	1 c. water
Sugar . . . . .	1 c.	1 c.	¾ c.
Fruit juice . . . . .	1½ c. orange juice juice 1 lemon	¼ c. lemon juice	½ c. lemon juice

<i>Ingredients:</i>	<i>Coffee</i>	<i>Wine</i>
Gelatin . . . . .	2 tbsp.	1 tbsp.
Cold water . . . . .	½ c.	¼ c.
Boiling liquid . . . . .	1 c. water	½ c.
Sugar . . . . .	⅓ c.	¼ c.
Fruit juice . . . . .	2 c. boiled coffee	juice 1 lemon, juice ½ orange ½ c. wine

*Fruit:* When orange or lemon jelly begins to thicken, add sliced bananas, cherries, pieces of cooked pineapple, nuts, and orange sections.

*Fruit jellies with whip:* Fill glasses  $\frac{3}{4}$  full and let stand until firm. Cool a small portion of the jelly until sirupy. Whip until frothy and place on top of glasses.

### Sponges

<i>Ingredients:</i>	<i>Pineapple</i>	<i>Chocolate</i>
Gelatin . . . . .	2 tbsp.	2½ tbsp.
Cold water . . . . .	¼ c.	½ c.
Boiling water . . . . .	¼ c.	1 oz. chocolate and 2½ c. scalded milk
Sugar . . . . .	¼ c.	6 tbsp.
Pineapple juice . . . . .	¾ c.	⅛ tsp. salt
Egg whites . . . . .	3	3 whole eggs
Shredded pineapple . . . . .	½ can	1 tsp. vanilla

**Snow Puddings**

<i>Ingredients:</i>	<i>Lemon</i>	<i>Orange</i>
Gelatin . . . . .	2 tbsp.	2 tbsp.
Cold water . . . . .	$\frac{1}{4}$ c.	$\frac{1}{4}$ c.
Boiling water . . . . .	1 c.	1 c.
Sugar . . . . .	$\frac{3}{4}$ c.	$\frac{3}{4}$ c.
Lemon juice . . . . .	$\frac{1}{2}$ c.	3 tbsp.
Orange juice . . . . .		$\frac{1}{2}$ c.
Egg whites . . . . .	3	3

**Spanish Creams**

<i>Ingredients:</i>	<i>Plain</i>	<i>Macaroon</i>
Gelatin . . . . .	2 tbsp.	2 tbsp.
Cold liquid . . . . .	$\frac{1}{2}$ c. milk	$\frac{1}{2}$ c. water
Scalded milk . . . . .	$2\frac{1}{2}$ c.	2 c.
Egg yolks . . . . .	3	3
Sugar . . . . .	$\frac{1}{4}$ c.	$\frac{1}{4}$ c.
Salt . . . . .	$\frac{1}{8}$ tsp.	$\frac{1}{8}$ tsp.
Vanilla . . . . .	1 tbsp.	
Egg whites . . . . .	3	3
Macaroons . . . . .		$\frac{2}{3}$ c. crumbs

**Bavarian Creams**

<i>Ingredients:</i>	<i>Coffee</i>	<i>Grape</i>	<i>Orange</i>
Gelatin . . . . .	$1\frac{1}{2}$ tbsp.	$1\frac{2}{3}$ tbsp.	1 tbsp.
Cold water . . . . .	$\frac{1}{4}$ c.	$2\frac{2}{3}$ tbsp.	$\frac{1}{2}$ c.
Boiling liquid . . . . .	$\frac{1}{2}$ c. coffee	1 c. grape juice	$\frac{1}{2}$ c. water
Sugar . . . . .	$\frac{1}{3}$ c.	1 c.	1 c.
Fruit juice . . . . .		4 tbsp. lemon juice	1 c. orange juice
			$\frac{1}{2}$ lemon
Cream . . . . .	$1\frac{1}{2}$ c. (whipped)	$1\frac{1}{3}$ c. (whipped)	1 c. (whipped)

## Charlottes

	<i>Russe</i>	<i>Orange</i>	<i>Strawberry</i>	<i>Caramel</i>	<i>Chocolate</i>	<i>Coffee</i>
Gelatin . . . .	1½ tbsp.	1½ tbsp.	2 tbsp.	1½ tbsp.	1½ tbsp.	1½ tbsp.
Cold water . . .	¼ c.	¼ c.	¼ c.	½ c.	½ c.	¼ c.
Boiling liquid .	½ c. cream	½ c. water	½ c. water	1 c. water	½ c. cream	½ c. coffee
Sugar . . . .	½ c. powdered	1 c.	1 c.	1 c. caramelized	½ c.	½ c.
Thin cream (whipped from) . . . .	3½ c.	3 c.	3 c.	3 c.	3 c.	3 c.
Flavoring . . .	1½ tsp. vanilla	1 c. orange juice	2 c. strawberry pulp	1 tsp. vanilla	1 oz. chocolate	
		3 tbsp. lemon juice	1 tbsp. lemon juice		1 tsp. vanilla	

NOTE: The cream left after removing the whip may be used for other purposes.

## SCORE CARD

## Gelatin Desserts

<i>General appearance</i> . . . . .	40
Container . . . . .	(5)
Form . . . . .	(10)
Color . . . . .	(10)
Appearance . . . . .	(10)
Garnish . . . . .	(5)
<i>Gelatin mixture</i> . . . . .	60
Density . . . . .	(10)
Flavor . . . . .	(40)
Imperceptibility of gelatin (10)	

100

## REFERENCES

- ATWATER. Poultry as Food. United States Department of Agriculture, Farmers' Bulletin 182 (1903).
- ATWATER and BRYANT. The Composition of American Food Materials. United States Department of Agriculture, Office of Experiment Stations, Bulletin 28 (Revised).
- CARVER. The Pickling and Curing of Meat in Hot Weather. Tuskegee Institute, Experiment Station, Bulletin 24 (1912).

- COOK. Bouillon Cubes: Their Contents and Food Value compared with Meat Extracts and Homemade Preparations of Meat. United States Department of Agriculture, Bulletin 27 (1913).
- EDELMANN. Textbook of Meat Hygiene.
- GREEN. How to Cook Meat and Poultry.
- GRINDLEY. Studies of the Effect of Different Methods of Cooking upon the Thoroughness and Ease of Digestion of Meat. United States Department of Agriculture. Office of the Experiment Stations, Bulletin 193 (1907).
- HALL. Market Classes and Grades of Meat. University of Illinois, Agricultural Experiment Station, Bulletin No. 147.
- HALL and EMMETT. Relative Economy, Composition and Nutritive Value of the Various Cuts of Beef. Illinois Agricultural Experiment Station, Bulletin 158 (1912).
- LANGWORTHY. The Guinea Fowl and its Use as Food. United States Department of Agriculture, Farmers' Bulletin 234 (1905).
- LANGWORTHY and HUNT. Mutton and its Value in the Diet. United States Department of Agriculture, Farmers' Bulletin 526 (1913).
- LANGWORTHY and HUNT. Economical Use of Meat in the Home. United States Department of Agriculture, Farmers' Bulletin No. 391 (Corrected 1910).
- LEACH. Food Inspection and Analysis.
- LIGHTON and DOUGLAS. The Meat Industry and Meat Inspection.
- MITCHELL. Flesh Foods.
- PENNINGTON. The Handling of Dressed Poultry a Thousand Miles from the Market. Yearbook of the Department of Agriculture for 1912.
- SHERMAN. Food Products.
- SPRAGUE. A Precise Method of Roasting Beef. University of Illinois, Bulletin 419 (1907).
- WILEY. Foods and their Adulterations.
- WILEY and BIGELOW. Preserved Meats. United States Department of Agriculture, Bureau of Chemistry, Bulletin 13, Part 10.
- WHITE. Meat. Ohio State University, Agricultural College Home Makers' Reading Course (1912).



## CHAPTER X

### POULTRY

IN selecting poultry see that the flesh is firm, that there is a fair amount of fat underneath the skin, that the latter is whole and of a clear yellow color, and that the odor is good. Chickens and fowls have certain characteristics which make them readily distinguishable. Chickens have soft feet, a flexible breast bone, many pin feathers, and little fat, while fowls have hard and scaly feet, a rigid breast bone, long hairs, and a large amount of fat around the intestines.

Poultry is not classed as belonging to the slaughterhouse industry and does not come under the provisions of the meat inspection law.

The composition of poultry is essentially the same as that of meat. The light meat is composed of more tender fibers less firmly held together by connective tissue than the dark meat. Light meat also contains less fat. For these reasons, it is apt to be more rapidly digested, at least in the stomach, and is therefore preferable for persons having weak digestion.

**Dressing and cleaning poultry.** The "dressing" of chicken is often done now at the market. If it is necessary to do it, make an incision with a sharp knife just inside one of the legs, in the groin. Remove all entrails. Loosen skin at neck and remove crop. Wash thoroughly inside and out, holding the cavity under running water. Singe hairs by holding over burning paper or gas flame. Remove pin feathers with the point of a knife and cut the oil bag from the tail. If it is a fowl, take out the tendons separately, using a skewer. Cut the gall bladder away from the liver and cut off the outer coat of the

gizzard. Place gizzard and heart in cold water; heat quickly to boiling and then simmer until tender. Add the liver a short time before removing the other giblets. The giblets may be chopped and added to the gravy.

**Trussing poultry.** Insert a skewer underneath the legs, then thrust another one through the wings and breast. With string, tie the ends of the legs together and fasten them to the tail. Wind the ends of the string fastened to the tail, around the ends of the skewer beneath the legs. Cross the strings over the back, and wind them around the ends of the skewer through the wings; tie the strings together at the back.

**Boning poultry or birds.** To bone birds, chickens, or turkeys, select undrawn birds with head and feet on. Remove pin feathers and singe. Draw tendons from the legs by making an incision just below the knee joint, and with a strong skewer draw the tendons out one at a time. Loosen the skin near the feet and cut off feet. Make an incision through the skin from the neck to the tail, the entire length of the backbone. Scrape the flesh from the bones until the shoulder blade is found, then continue scraping around the wing joint. Scrape down the backbone to the thigh, then around the second joint and leg, cutting tendinous portion when necessary. When one side of backbone is boned, bone the other, then remove flesh from breastbone, on either side of bird. When flesh is all separated from bone, discard carcass (*i.e.* the skeleton with entrails, etc.), wipe flesh and skin, and arrange in original shape. The birds may be seasoned and broiled, or stuffed, sewed into shape and steamed. Small birds are generally prepared the former way, and large birds the latter way.

### Roast Chicken

*Time:*

4 lbs.

1½ hrs.

Fill cavity of a dressed chicken with stuffing (see below) and sew edges together. Truss and place on its back in a roasting pan. Dredge with flour, and salt, spread with butter, or lay strips of bacon across the chicken. Brown in a hot oven, then reduce temperature, cover and baste frequently until breast meat is tender.

**Stuffing for Roast Chicken***Ingredients :*

1 c. crumbs	onion juice
$\frac{1}{2}$ c. melted butter	parsley
$\frac{1}{4}$ tsp. salt	$\frac{1}{2}$ tsp. poultry seasoning
	$\frac{1}{8}$ tsp. pepper

**Gravy**

Pour off liquid from the pan and place 2 tbsp. chicken fat or butter in the pan. Brown with 2 tbsp. flour and 1 c. stock in which giblets were cooked. Season. Strain.

Evaporate water in pan and add flour. Brown and proceed as above.

Add the flour mixed with a little cold milk to the boiling liquid in the pan.

**To Cut up a Fowl for Stewing**

After removing entrails and other organs singe, draw out pin feathers, remove tendons, and oil bag. Cut through flesh, at thigh, bend back legs and cut off. Separate second joint and drum stick. Remove wings and cut off the tips. Separate back from breast by cutting through the ribs. Cut breast in two with a cleaver.

**Stewing**

Cover pieces of fowl with boiling water. Simmer until tender, adding salt when half cooked.

**Fricasseed Chicken**

Dredge stewed chicken with flour and brown in chicken fat. Arrange on toast surrounded with white or brown sauce and biscuits.

**Fried Chicken**

Dip stewed chicken in flour, egg and flour. Brown in chicken fat and lard, or butter and lard. Serve with brown sauce.

**Maryland Chicken**

Dip stewed chicken in flour, egg and fine crumbs. Place in a dripping pan with pieces of salt pork or chicken fat. Cover and bake 30 minutes. Serve with white sauce, broiled bacon, and corn fritters.

**Sauce for Chicken***Ingredients:*

2 c. chicken stock	4 tbsp. flour
(half milk may be used)	salt
4 tbsp. chicken fat	pepper
2 tsp. parsley	

**Chicken Pie***Ingredients:*

1 stewed fowl cut in pieces	biscuit crust (2 c. flour)
2 c. brown sauce	parsley

*Method:*

Place the chicken in a buttered baking dish, add the brown sauce and parsley and cover the mixture with biscuit dough.

Place a cup in center of baking dish to hold up crust if the baking dish is large. Have the brown sauce and chicken hot when the crust is added. Bake in a hot oven.

**Chicken en Casserole**

Dress and clean a young, tender fowl and cut in pieces for serving. Spread with  $\frac{1}{3}$  c. butter, put in a casserole and sprinkle with salt and pepper. Pour over 1 c. boiling water, cover, and cook until chicken is tender, the time required being about 1 hour. Add 1 c. cream and 2 c. mushrooms. Cook 10 minutes and thicken with 1 tbsp. flour, diluted with 2 tbsp. water.

**Creamed Chicken**

Equal parts cubed chicken and medium white sauce. Use chicken fat instead of butter and half milk and stock for the liquid in the white sauce.

**Chicken à la King***Ingredients :*

1 c. chicken cut in strips	3½ tbsp. fat
½ c. sautéed mushrooms	1 tbsp. cornstarch
¼ c. pimientos	1½ c. stock
¼ c. peas	or half milk and stock
¼ c. string beans	½ tsp. salt
	1 egg yolk

**Creole Chicken***Ingredients :*

4 tbsp. butter	4 tbsp. flour
¼ c. finely chopped onion	2 c. chicken stock
2 c. stewed tomatoes	1 finely chopped red pepper
½ c. celery	salt
	1 chicken

*Method :*

Cut chicken in pieces for serving. Brown chicken in butter with the onion. Remove chicken, add flour, chicken stock, tomatoes, red pepper, celery, and salt. Cook until flavors are well blended. Prepare chicken in sauce and cook until tender, adding more water as liquid evaporates.

Arrange on serving platter ; surround with gravy and garnish with cooked macaroni and parsley.

## CHAPTER XI

### FISH AND SHELLFISH

THERE is a steadily increasing tendency towards better conservation and more economical utilization of the fishery products as food. The Government maintains a Bureau of Fisheries and has established stations on the coast and inland lakes for the study and protection of these food supplies. The fishery industries are capable of great development both by improved methods of handling the well-known species and by utilizing as food the flesh of species formerly neglected.

According to the quantity of fat it contains, fish may be divided into two classes: (*a*) lean, or white fish, and (*b*) oily, or dark fish. The flesh of lean fish is light in color and the oil is concentrated in the liver. The flesh of oily fish is dark in color, and the oil is distributed throughout the body. Cod, halibut, haddock, etc., are white fish. Salmon, mackerel, herring, etc., are dark fish.

Fish may also be divided into two classes, according to the water in which they live, fish from the sea being termed salt-water fish, and those from inland lakes and rivers, fresh-water fish.

Detailed information in regard to the various species of food fish may be obtained from the Reports and Bulletins of the United States Bureau of Fisheries.

Fish is at its best when cleaned and cooked just after being caught. Fish to be sold "fresh" may be sent directly to market or may be kept in cold storage either chilled to ice temperature or hard frozen. In selecting fish see that the

flesh feels firm, that the eyes are bright and bulging, and that the gills are red and free from blubber.

From most standpoints fish and shellfish are interchangeable with meat in the dietary. There is a general similarity in the chemical structure of the proteins, and the coefficients of digestibility of fish are approximately equal to those of meat.

Many kinds of fish are preserved in large quantities by drying, salting, smoking, canning, or by combinations of these methods. For outlines of the preparation of salt codfish, canned salmon and sardines in oil see Sherman's *Food Products*, pages 230-236.

#### Methods of cooking fish :

boiling	braising	frying
steaming	baking	"planking"
	broiling	

*Technique of cooking fish.* To prevent flesh falling apart, due to tendency of the connective tissue to dissolve,

- a. Wrap in cheesecloth when boiling.
- b. Coat with egg and crumbs when frying.
- c. Place on strips of buttered cheesecloth when baking.

*Cleaning fish.* Rub off scales from tail to head with a sharp knife. Cut through the skin of the back and abdomen, loosen it at the tail and pull it off. Remove head, open abdomen and take out the internal organs. Wash in cold, salt water.

*Boning fish.* Slit the flesh down the back and separate flesh from side bones. Pull out the spine and attached bones.

*Fish in combination with other food:* With potatoes as fishballs, with eggs as soufflé, with white sauce as croquettes, creamed or scalloped, with celery as salad.

*Vegetables suitable for serving with fish as garnish are :*

potato balls or curls	parsley	cucumber
-----------------------	---------	----------

#### *Sauces for fish :*

drawn butter	Béchamel	egg
sauce tartare	olive	cheese
	Hollandaise	

**Boiled Fish**

Thick pieces, or whole, small fish  
1 tbsp. salt to 3 qts. water

Wrap in cheesecloth, plunge into boiling water. Simmer 30-40 minutes, or until tender.

**Broiled Fish**

Broil the flesh side first, then turn and broil other side. The length of time for cooking depends on the thickness of the fish. Season with butter, salt, pepper, and garnish with parsley.

**Steamed Fish**

Wipe fish with damp cloth. Wrap in cheesecloth and steam or boil until tender. Time varies with size and shape of fish. At end of 5 minutes, add 1 tbsp. of salt. A little vinegar may also be added to the water.

**Baked Stuffed Fish**

Wash fish and dry with cheesecloth. If not cleaned, remove internal organs. Remove backbone by beginning at the tail and with a sharp knife push the flesh away from the bones. Wipe with damp cloth, sprinkle with salt, and stuff. Sew with coarse cotton, insert slices of salt pork at intervals on each side. Bake in hot oven, allowing 15 minutes to the pound with 15 minutes additional. Serve with Hollandaise Sauce.

**Stuffing for Fish***Ingredients:*

2 c. bread crumbs  
 $\frac{1}{2}$  tsp. salt  
 $\frac{1}{8}$  tsp. white pepper  
cayenne

1 tsp. onion juice  
1 tsp. chopped parsley  
1 tsp. capers or chopped pickles  
 $\frac{1}{4}$  c. melted butter



**Fish Cooked in Fat**

Season with salt and pepper, dip in flour, egg, and dried crumbs. Fry in deep fat. Drain on paper.

**Fried Smelts**

Clean smelts, leaving on heads and tails. Sprinkle with salt and pepper, dip in flour, egg, and crumbs, and fry 3-4 minutes in deep fat. Arrange on hot platter. Garnish with parsley and lemon. Serve with Sauce Tartare.

**Shad Roe**

Wash and cook in boiling, salted water 10 minutes. Drain and dry. Season. Broil or brown in butter.

**Turbans of Flounder**

Clean fish, remove skin and backbone. Cut each fillet in two pieces or if very large three pieces. Season with salt and pepper, roll and fasten with small skewers or toothpicks. Dip in crumbs, egg and crumbs, and fry in deep fat. Drain on brown paper and serve with Sauce Tartare.

**Planked Haddock**

Skin and bone a haddock, leaving meat in two fillets. Brown fillets separately. Remove to a plank and season with salt and pepper. Garnish with mashed potatoes, outlining the original shape of the fish. Bake until potatoes are well browned. Finish garnishing with parsley and slices of lemon covered with finely chopped parsley.

**FISH COMBINED WITH OTHER FOODS****Fish Balls***Ingredients :*

1 c. salt codfish	1 egg
2 c. potatoes	$\frac{1}{2}$ tbsp. butter
$\frac{1}{8}$ tsp. pepper	

*Method:*

Wash the fish in cold water and break into small pieces. Wash and pare the potatoes and cut into pieces. Cook the fish and potatoes together in boiling water until the potatoes are soft. Drain and shake over the fire until dry; mash with a wire potato masher, add the beaten egg, butter and pepper, and beat until light. Take up the mixture by spoonfuls, mold slightly and slip into the hot fat. Fry until brown, or shape into round, flat cakes, dredge with flour and brown in butter.

**Scalloped Fish***Ingredients:*

2 c. flaked fish	2 c. medium white sauce
1 c. buttered crumbs	

**Creamed Codfish**

Reheat boiled codfish in medium white sauce. An egg may be added. Serve on toast.

**Fish Chowder***Ingredients:*

5 lb. haddock	4 c. cold water
4 c. diced potatoes	2 tbsp. butter
1 onion	4 tbsp. flour
$\frac{1}{2}$ c. diced salt pork	4 c. scalded milk
salt, pepper, cayenne	10 buttered crackers

*Method:*

Remove head, skin, and bones and cut fish into fillets. Cover head, skin, and bones with cold water. Simmer 20 minutes, strain, and reserve liquid. Parboil potatoes 10 minutes. Cook onions in salt pork until yellow. Remove onion and salt pork if desired. Arrange fish and potatoes in layers, seasoning with salt and pepper. Cover with water in which bones were cooked and simmer until potatoes are tender. Combine mixtures and pour over buttered crackers which have been soaked in enough cold milk to moisten them.

## FISH SAUCES

## Egg Sauce

*Ingredients :*

1 pt. boiling water	1 tsp. salt
$\frac{1}{4}$ c. butter	1 tbsp. lemon juice or vinegar
cayenne	2 hard-cooked eggs

*Method :*

Prepare in the same way as white sauce. The eggs may be chopped or the whites sliced and the yolks pressed through a sieve and added to the sauce.

## Drawn Butter Sauce

*Ingredients :*

$\frac{1}{3}$ c. butter	1 $\frac{1}{2}$ c. hot water
3 tbsp. flour	$\frac{1}{2}$ tsp. salt
	$\frac{1}{8}$ tsp. pepper

*Method :*

Melt  $\frac{1}{2}$  the butter, add flour and seasonings and gradually the hot water. Boil 5 minutes and add remaining butter in small pieces.

## Béchamel Sauce

*Ingredients :*

1 $\frac{1}{2}$ c. white stock	$\frac{1}{4}$ c. butter
1 slice onion	$\frac{1}{4}$ c. flour
1 slice carrot	1 c. scalded milk
1 bay leaf	$\frac{1}{2}$ tsp. salt
parsley	$\frac{1}{8}$ tsp. pepper

*Method :*

Cook stock 20 minutes with onion, carrot, bay leaf, parsley ; strain. There should be 1 cupful. Melt the butter, add flour and gradually hot stock and milk. Season with salt and pepper.

**Maitre d'Hôtel Butter***Ingredients:*

$\frac{1}{4}$ c. butter	$\frac{1}{2}$ tbsp. chopped parsley
$\frac{1}{2}$ tsp. salt	$\frac{3}{4}$ tbsp. lemon juice
	$\frac{1}{8}$ tsp. pepper

*Method:*

Put butter in a bowl and cream. Add salt, pepper, and parsley, then lemon juice very slowly. The heat of the meat or fish will dissolve the butter.

**Sauce Tartare**

To  $\frac{3}{4}$  c. mayonnaise dressing add  $\frac{1}{2}$  tbsp. each, finely chopped.

capers	onions
pickles	parsley
$\frac{1}{2}$ shallot	} may be omitted
$\frac{1}{4}$ tsp. powdered tarragon	

**Hollandaise Sauce***Ingredients:*

$\frac{1}{2}$ c. butter	$\frac{1}{4}$ tsp. salt
2 egg yolks	$\frac{1}{16}$ tsp. cayenne
$1\frac{1}{2}$ tsp. lemon juice	$\frac{1}{2}$ c. boiling water

*Method:*

Cream the butter and add yolks one at a time; beat well. Add seasoning, then boiling water and cook over hot water, stirring constantly until mixture thickens. Remove from fire, add lemon juice and serve at once.

**Mock Hollandaise Sauce***Ingredients:*

3 tbsp. butter	1 tsp. salt
3 tbsp. flour	$\frac{1}{2}$ —1 lemon
2 c. milk	2 eggs

*Method:*

Prepare white sauce. Pour over beaten eggs, stir until it thickens. Add lemon juice before serving.

## FOOD VALUES

## Creamed Codfish on Toast

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	% Cost	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>6</sub> ) Grams	IRON Grams
Bread . . .	2 slices	78	7.2	.92	40.78	200	.008	.022	.15	.0006
Fish . . .	2 tbsp.	14.6	4	.04		17	.009	.003	.09	.0001
Butter . . .	1½ tbsp.	15.7	.15	13.34		121	.0119	.004	.004	
Butter . . .	2 tbsp.	28	.28	23.8		215	.0212	.006	.008	
Flour . . .	2 tbsp.	14.1	1.58	.14	10.56	50	.0015	.004	.025	.0002
Milk . . .	1 c.	216.6	7.14	8.67	18.83	150	.0225	.358	.454	.0005
Total, cooked	2 slices bread	333	20.4	46.91	70.17	753	.0742	.396	.731	.0014
100-Calorie portion	¾ c. fish									
	½ slice bread	242.9	2.7	6.2	9.33	100	.01	.053	.097	.0002
	⅓ c. fish									

## SHELLFISH

Shellfish are divided into two classes: (a) mollusks, and (b) crustaceans. Clams, oysters, scallops, and mussels belong to the first class, and lobsters, crabs, shrimps, and crawfish belong to the second class.

**Oysters.** Oysters are the most important of the shellfish as factors in the general food supply. The flavor depends on the locality in which they are grown. The smaller are sought for serving raw, and the medium and larger for cooking. They are in season from September to May and are much safer in the latter part of the winter.<sup>1</sup> The whole flesh of the oyster

<sup>1</sup> The danger of infection through eating oysters from polluted waters is discussed in Prescott and Winslow's *Elements of Water Bacteriology*, and Sherman's *Food Products*.

is edible, even the muscle by which it opens and shuts its shell being tender.

**Clams.** Clams are of two kinds. They are known as hard and soft, or round and long, and in Rhode Island the hard, round clam bears the Indian name Quahaug, the soft-shell clam being the only "clam." The round clams are raked from the bottom of shallow waters and are used when young and small in place of raw oysters. The long clams lie buried in the mud of creeks and shores left exposed at low tide, and are dug out of the mud with hooks. Both kinds of clams have a tough portion that is softened in cooking and that is more or less indigestible. The long "neck" which protrudes from the shell should be discarded. Clams are always in season. They are cheap and are commonly used in soups and chowders.

**Scallops.** Scallops as purchased consist solely of the round white muscle which operates the shell. The scallop is migratory and reaches the creeks and shores in autumn.

**Lobsters.** The muscle of lobsters compares favorably with meat. When fresh, and served at a suitable time, lobsters are not indigestible.

**Crabs.** Crabs, like lobsters, shed their shell annually. When the new shell is forming, they are called soft-shell crabs. They are found near the coast of the Southern and Middle States, and are usually high-priced. Crabs should be inspected according to the rules for lobsters.

### Steamed Clams

For steaming, clams should be bought in the shell. Wash in several waters. Place in saucepan, allowing  $\frac{1}{4}$  c. water to 1 qt. clams. Cover closely and steam until clams partially open. Care should be taken not to overcook them. Serve with melted butter. A few drops of lemon juice may be added to the butter.

**Clam Broth***Ingredients:*

2 doz. clams	water
2 tbsp. butter	pepper
	salt

*Method:*

Wash and scrub clams and place in saucepan with cold water. Cook until shells are open. Evaporate liquid down to 2 c. Remove soft part from shells, add to liquid, add seasonings, reheat, and serve with a cracker or piece of toast.

**Clam Chowder I***Ingredients:*

3 doz. clams	1 onion
1 c. boiling water	4 tbsp. butter
2 c. potato cubes	4 c. scalded milk
4 slices bacon	8 crackers
	salt and pepper

*Method:*

Wash and steam clams. Remove meat and chop. Cook potatoes, bacon, onion, salt, pepper, and butter in clam juice until vegetables are soft, adding more water if needed. Add clams and simmer 3 minutes. Add milk and crackers before serving.

**Clam Chowder II***Ingredients:*

A	{	1½ doz. clams	½ tsp. tabasco sauce
		1 c. tomatoes	½ tsp. salt
		1 tbsp. catsup	⅛ tsp. pepper
B	{	4 slices bacon	1 tsp. parsley
		1 cubed potato	1 onion
C	{	1 slice toast — diced	½ sliced lemon
		2 tbsp. cracker crumbs	

*Method:*

Strain liquor from clams, add to B with boiling water. Simmer until potatoes are tender, add A, boil 3 minutes. Add C.

**Oyster Broth***Ingredients:*

1 c. oysters	$\frac{1}{2}$ tsp. salt
$1\frac{1}{3}$ c. milk	pepper
$1\frac{1}{2}$ tbsp. water	1 tbsp. butter

*Method:*

Scald milk. Heat oysters in water until plump. Add milk and seasonings.

**Oyster Stew***Ingredients:*

1 pt. oysters	1 pt. thin white sauce
---------------	------------------------

*Method:*

Heat the oysters in their own liquor or sufficient water until the edges curl.

Add cooked oysters to white sauce just before serving.

**Oyster Cocktail***Ingredients:*

1 tsp. grated horseradish	2 tbsp. tomato catsup
6-8 drops tabasco sauce	$\frac{1}{4}$ tsp. salt
$\frac{1}{4}$ tbsp. Worcestershire sauce	2 tbsp. lemon juice

*Method:*

Serve in glasses or in halves of grapefruit.

**Fried Oysters***Ingredients:*

2 doz. large oysters	$1\frac{1}{2}$ c. grated crumbs
1 egg and 1 tbsp. water	salt, pepper

*Method:*

Drain oysters, wash, dry, and season with salt and pepper. Crumb, egg and crumb oysters, and fry in deep fat.



**Pigs in Blankets or Oysters in Bacon***Ingredients:*

1 doz. oysters	4 slices toast
1 doz. slices bacon	

*Method:*

Drain oysters, wash, dry, and roll each in bacon. Fasten with skewer. Cook in hot omelet pan until slightly crisp and brown. Remove skewer and serve on toast.

**Oyster Fricassee***Ingredients:*

$\frac{1}{4}$ c. butter	paprika
2 tsp. salt	pepper
2 qts. oysters	

*Method:*

Place butter, salt, and pepper in a saucepan, and when hot, add oysters. Cover and shake until oysters are plump. Drain and add cream to the liquid to make 2 c.

Make sauce of the 2 c. liquid	2 tsp. lemon juice
$\frac{1}{4}$ c. butter	2 eggs
$\frac{1}{4}$ c. flour	

Add oysters. Serve on toast.

**Lobsters***Directions:*

Lobsters should be bought alive. Small ones, heavy for their size, are best. If they are bought after being cooked, the tail should spring back quickly when straightened, otherwise the lobster was dead before being cooked.

Cook 15-30 minutes below boiling point. When done, place in cold water. If cooked too long, they become tough.

Break off the claws, separate tail from body and body from shell. Save the coral. Crush the tail by pressing the sides together, then pull or cut it open on the under side and take out the meat in one piece. Remove the intestine which runs the entire length. Break off the tail from the body before picking the meat from the joints.

The *gills*, the *stomach*, and the *intestines* are the only parts not eaten. The liver may or may not be eaten. Break the body in the middle lengthwise and pick the meat from the joints. Pound the claws carefully so that the meat may be removed without being crushed. The meat should not be kept more than 18 hours after it is cooked. Season with salt and cayenne, pack in a covered jar, and place on ice. If French dressing is to be used, omit salt and cayenne from the recipe.

If it is desired to save the tail for serving the salad, break it on the inside.

### Lobster Newburg

#### Ingredients:

2 c. lobster meat	nutmeg
2 tbsp. butter	$\frac{1}{4}$ c. sherry
$\frac{1}{2}$ tsp. salt	2 tbsp. brandy
cayenne	$\frac{1}{2}$ c. thin cream
3 egg yolks	

#### Method:

Melt butter, add lobster meat, and cook 3 minutes. Add cream and egg yolks slightly beaten. Stir the mixture until thickened, over hot water. Add wine and serve.

### Deville Crabs

#### Ingredients:

6 crabs	$\frac{1}{2}$ tsp. mustard	1 tbsp. lemon juice
2 tbsp. butter	2 drops tabasco sauce	1 tsp. parsley
2 tbsp. flour	$\frac{1}{2}$ tsp. salt	$\frac{1}{4}$ tsp. Worcestershire sauce
cayenne		1 $\frac{1}{4}$ c. cream

#### Method:

Cook crabs in boiling water (salted) for 20 minutes. Place in cold water for a few minutes. Pick out the meat, being careful not to break the shell. Make a sauce of the remaining ingredients, season highly, and add crab meat to it. If the mixture is too stiff, add milk or cream to make the right consistency. Wash and scrub the upper shell and fill with the mixture. Cover with buttered crumbs and bake from 15-20 minutes, or until brown.

**Soft-shell Crabs***Method:*

Lift each point of the back shell and remove the spongy substance found beneath it. Turn the crab on its back and remove the semi-circular piece of dark, soft shell called the "apron," and the spongy substance under it. Wash and dry. Proceed as for Fried Oysters.

## REFERENCES

*Fish*

ATWATER and BRYANT. The Composition of American Food Materials. United States Department of Agriculture, Office of Experiment Stations, Bulletin 28 (Revised).

GREEN. How to Cook Fish.

GREEN. How to Cook Shellfish.

LANGWORTHY. Fish as Food. United States Department of Agriculture, Farmers' Bulletin 85 (Revised 1907).

MILNER. Digestibility of Fish and Poultry. Storrs (Conn.) Agricultural Experiment Station, Seventeenth Annual Report, pages 116-142 (1905).

PRESCOTT and WINSLOW. Elements of Water Bacteriology.

SHERMAN. Food Products.

THOMPSON. Practical Dietetics.

United States Bureau of Fisheries. Reports and Bulletins.

WILEY. Foods and their Adulterations.

## CHAPTER XII

### FLOUR MIXTURES

FLOUR mixtures are taken to mean food materials in which the basis is flour to which is added liquid, and a leaven; sugar, butter, and various fruits or condiments may be added also. These mixtures are baked, fried, or steamed. The composition and nutritive value of a flour mixture naturally varies with the ingredients. No general statements need be attempted, but the student should work out the food values of as many of the products as time permits. See also *A Laboratory Manual for Dietetics*, Mrs. Mary S. Rose, and Bulletin 28, of the Office of Experiment Stations, United States Department of Agriculture.

For the purposes of this book it seems best to take up the experiments on Flour Mixtures as a connected group, while a division is made in the recipes.

### FLOUR EXPERIMENTS

**143.** — To  $\frac{1}{4}$  c. bread flour in a bowl, add just enough cold water to make a *stiff* dough. Knead with a wooden spoon or the fingers for 5 minutes. Cover the bowl with a cheesecloth and allow it to stand for 30 minutes so that the water may develop the full amount of gluten.<sup>1</sup>

After the dough has stood for 30 minutes, add sufficient cold water to cover the mixture and knead the mass gently but thoroughly in the bowl.

<sup>1</sup> At least four different kinds of protein can be isolated, but the most important for us to take account of are gliadin, and glutenin, the essential constituents of "gluten."

*a.* Notice the milky color of the water as soon as the kneading begins.

*b.* To what is the milky color due?

*c.* Determine by the iodine test, page 13.

**144.** — Continue kneading the mass, changing the water frequently until it no longer shows the milky color.

The resultant mass is gluten. Notice the *stringy, elastic* character. Notice the color.

Save for subsequent experiments.

NOTE: Perhaps some of the class have made "gum" by chewing wheat grain and remember the sticky, elastic mass with sweetish taste which results.

**145.** — To small portions of the washed gluten, apply the following tests:

*a.* Xanthoproteic, page 85.

*b.* Iodine, page 13.

*c.* Fehling-Benedict, page 13.

**146.** — Burn a small portion; an odor as of burning wool or feathers is noticed.

What material burns with such an odor?

**147.** — Dry a small piece of gluten with a cheesecloth.

Place it on an ungreased pan and bake it in a hot oven.

The mass will expand, but, on removing from the oven, will contract.

What causes it to change shape?

How can it expand and contract without cracking?

To which class of foodstuffs does gluten belong? What are its physical characteristics?

**148.** — To give the class a more comprehensive idea of gluten, the instructor should contrast the following by preparing gluten or attempting to prepare gluten:

*a.* pastry flour

*d.* graham flour

*b.* rye flour

*e.* corn meal

*c.* entire wheat

NOTE: These experiments should demonstrate to the class the reasons for the thorough kneading of breads as contrasted with the slight beating of cake after the flour has been added.

**Bread**

**149.** — Make a microscopic examination of bread and pastry flour in :

- a.* A drop of cold water.
- b.* A drop of dilute iodine.

Describe your observations.

**150.** — Do the same with rye and corn meal.

**151.** — Apply the iodine and Millon tests to small pieces of both the crust and the soft inner portions of a piece of bread.

What do you notice as to the intensity of color and quickness of reaction?

**152.** — *a.* Separate the crust and softer part. Put each, broken into small pieces, into a small beaker of cold water. Let stand 30 minutes and then filter through a wet fluted filter.

*b.* To the filtered extract from each beaker, apply the following tests :

Iodine, page 13.

Fehling-Benedict, page 13.

Biuret, page 85.

Xanthoproteic, page 85.

*c.* After performing *b*, what are your conclusions?

**153.** — The instructor will be able to amplify the experiment by repeating **151** and **152** with portions of the following food materials :

- a.* plain muffin
- b.* plain cake.
- c.* soda cracker.
- d.* uneeda biscuit.

Review the experiment with dextrin (page 61).

**Muffins**

**154.** — Use recipe for plain muffins. Combine ingredients in the following manner and bake samples at the following temperatures :<sup>1</sup>

<sup>1</sup> These temperatures are suggested by Miss Van Arsdale in the Bulletin, *Some Attempts to Standardize Oven Temperatures for Cookery Processes*. Note which range in temperature approximated a satisfactory result. Take the most satisfactory range and again bake muffins, using the selected temperatures as a starting point from which to formulate a range in temperature which produces desirable results. What conditions influence the production of muffins and necessitate a graduation in temperature?

250-350° F.

350-400° F.

400-450° F.

450-550° F.

In all the experiments with Flour Mixtures use the temperatures stated above as a starting point from which to make your own temperatures.

*a.* Sugar, unbeaten egg, melted shortening, dry ingredients, liquid. Mix thoroughly.

*b.* Sugar, egg beaten with Dover egg beater, dry ingredients, liquid, melted shortening, no extra mixing.

*c.* Shortening creamed, yolk of egg, sugar,  $\frac{1}{2}$  liquid, dry ingredients,  $\frac{1}{2}$  liquid, stiffly beaten whites of eggs folded in.

*d.* Dry ingredients, chop in shortening, sugar, liquid, unbeaten eggs.

*e.* Compare results as to texture, flavor, crust, excess fat.

**155.**— Use recipe for Plain Muffins. Combine ingredients as above.

Other ingredients being alike in each case, use for shortening the following :

*a.* butter

*b.*  $\frac{1}{2}$  butter,  $\frac{1}{2}$  lard

*c.* lard

*d.* oleomargarine

*e.* crisco

*f.* corn oil

*g.* pure cottonseed oil

*h.* cheese

**156.**— As in Expt. **155**, except as follows :

Use for liquid the following :

*a.* sweet milk

*b.* sour milk

*c.* buttermilk

*d.* condensed milk (diluted)

*e.* milk powder (liquefied)

*f.*  $\frac{1}{2}$  milk,  $\frac{1}{2}$  water.

*g.* water.

**157.** — As before, except as follows:

Use for leaven the following (calculate the amount of leaven required in each case):

- a.* soda and cream of tartar
- b.* soda and sour milk
- c.* alum baking powder
- d.* phosphate baking powder
- e.* yeast

In each Expt. (**155–157**)

- a.* Compare the practical use of the variations in ingredients.
- b.* Compare approximate differences in cost in variations.
- c.* Conclusions.

### Biscuits

**158.** — Use recipe for Baking Powder Biscuits. Combine ingredients in the following manner:

*a.* Dry ingredients, shortening chopped in, liquid. Mix with a knife just enough to combine the ingredients. Turn the dough on a slightly floured board and roll it out, cut (see Expt. **159**), and bake.

*b.* Dry ingredients, liquid, melted shortening stirred into mixture with a spoon. Turn it on a slightly floured board, roll, cut out (see Expt. **159**), and bake.

**159.** — Divide biscuits cut out in Expt. **158** into three parts,  $a_1$ ,  $a_2$ ,  $a_3$ ;  $b_1$ ,  $b_2$ ,  $b_3$ . Brush  $a_1$  and  $b_1$  with a little milk before baking. Brush  $a_2$  and  $b_2$  with a little melted butter before baking. Bake  $a_3$  and  $b_3$  as cut out. Compare results.

**160.** — Use recipe for Baking Powder Biscuits.

Substitute for butter the following shortenings:

- |  |                          |
|--|--------------------------|
| <i>a.</i> $\frac{1}{2}$ butter, $\frac{1}{2}$ lard | <i>f.</i> chicken fat    |
| <i>b.</i> oleomargarine                            | <i>g.</i> olive oil      |
| <i>c.</i> lard                                     | <i>h.</i> cottonseed oil |
| <i>d.</i> crisco                                   | <i>i.</i> corn oil       |
| <i>e.</i> beef drippings                           | <i>j.</i> peanut oil     |

Compare the results as to appearance, flavor, texture.

**161.** — Compute the cost of the products of Expt. **160** and compare with the rating as to quality.



**Pastry**

**162.** — Use recipe for plain paste. Combine ingredients in the following manner :

*a.* Dry ingredients, shortening chopped in, ice water. Chill before rolling out.

*b.* Dry ingredients and ice water made into a dough. Roll mixture on a pastry cloth. Fold and roll the shortening in.

*c.* Dry ingredients and melted shortening mixed as much as possible. Chill, chop mixture into uncombined flour. Add ice water.

NOTE : An interesting observation can be made from the following experiment :

. Dry ingredients, *measured* and *melted* shortening, *versus* dry ingredients, *melted* and *measured* shortening.

**163.** — From the results of Expt. **162** decide upon the best method of combining ingredients and bake the following pies in this manner :

Pastry shell :

*a.* dredge with flour — apple pie.

*b.* brush over with white of egg — custard pie.

*c.* bake before filling — cream pie.

Sum up your observations concerning shortenings used in pastry, methods of combining, and baking of pies.

**Cake**

**164.** — Note that the general rule for plain cake conforms to these proportions :

$\frac{1}{4}$  as much shortening as sugar.

$\frac{1}{3}$  as much liquid as flour.

2 tsp. of baking powder to each cup of flour, but for every egg after the first,  $\frac{1}{2}$  tsp. of baking powder is deducted.

Combine the ingredients for plain cake in the following ways. Bake the products at the same temperature :

*a.* Cream the butter, add sugar, whole eggs unbeaten, milk, sifted dry ingredients.

*b.* Cream the butter, add unbeaten egg yolk, sugar, milk, sifted dry ingredients, beaten egg white.

*c.* Egg yolk, sugar, milk, sifted dry ingredients, melted butter, beaten egg white.

*d.* Cream the butter, add sugar, beaten egg yolk, milk and dry ingredients alternately, beaten egg whites.

**165.** — Repeat Expt. 164, substituting for butter the following:

*a.*  $\frac{1}{2}$  butter,  $\frac{1}{2}$  crisco

*b.*  $\frac{1}{2}$  butter,  $\frac{1}{2}$  lard

*c.* oleomargarine

*d.* crisco

*e.* cottonseed oil

*f.* corn oil

*g.* chicken fat

**166.** — *a.* Use the rule for plain cake, and prepare three cakes, using for shortening, butter, oleo, crisco.

*b.* Divide each rule into 5 parts A, B, C, D, E. Bake A in a slow oven; record temperature. Bake B in a moderate oven; record temperature. Bake C in a slow oven, increasing the temperature; record stages and changes in temperature.

Bake D in a hot oven, reducing the temperature; record temperatures and changes at each stage. Bake E in a cold oven, that is, light the burners when the cake is placed in the oven. Summarize results.

Record the optimum method of combination of ingredients and oven temperature for each fat used in cake baking.

**167.** — *a.* Add chocolate to plain cake recipe. Determine the amount necessary. What change in the amount of flour is necessary? Why?

*b.* Add nuts to plain cake recipe. Compare with plain cake. What change in the recipe is necessary? Why?

**168.** — *a.* **Cake without butter:** compare the recipe for butter cake with that for sponge cake. Note the absence of butter in the latter and also the greater number of eggs. Review the experiments with eggs and recall the effect of various temperatures in the cooking of eggs. Review the oven temperatures given by Miss Van Arsdale

in *Some Attempts to Standardize Oven Temperatures*, and compare with those determined in preceding experiments with butter cake. Select the range in each instance which corresponds to "slow" and "moderate." Prepare one rule of sponge cake (use first recipe) and bake samples at those temperatures. Compare as to moisture, texture, and length of cooking.

*b.* Repeat the above experiment, using any sponge cake recipe calling for a large number of eggs. In what way do the results differ from those in the preceding one? How do you account for these differences?

*c.* Repeat, using the first recipe for white sponge cake or angel cake. Compare the results with those in *a* and *b*. Account for the differences noted. What is a satisfactory range in oven temperatures for each type of cake?

*d.* Having determined the oven temperature in the above experiments, prepare three sponge cakes, combining the ingredients in the following manner:

Beat yolks with Dover egg beater. Add the sugar.

Beat whites	{	Dover egg beater.
		silver fork.
		wire whisk.

Fold in the whites before the flour.

Fold in the whites after the flour.

Stir in the whites after the flour.

Bake and compare as to texture. Which method seems most satisfactory?

NOTE: This experiment can be successfully carried out if arranged so that samples of *a*, *b*, and *c* are baked together at the various temperatures. Comparison is thus made easy.

### Leavens — Leavening Agents

A leaven or leavening agent is something which will lighten a mixture. Flour mixtures are usually leavened by steam, by evolution of carbon dioxide, or by the expansion of inclosed and heated air. White of egg or cream may be said to be "leavened" when "whipped," in which case the leavening

consists simply in the mechanical incorporation of air bubbles. In some bakeries (especially in England) dough is leavened by incorporating air under pressure, which when the pressure is released will expand even without application of heat.

When leavening is to be accomplished by means of carbon dioxide the latter is usually produced either:

(1) by yeast fermentation, producing carbon dioxide from a portion of the carbohydrate of the mixture;

(2) by interaction of sodium bicarbonate ("cooking soda") with an acid substance (either free acid or acid salt) in the presence of moisture.

Sour milk, buttermilk, vinegar, molasses, and some fruit juices contain free acids.

Many fruit juices contain acid salts.

Acid salts used as such to liberate carbon dioxide from sodium bicarbonate — in other words used as the "acid constituent" of baking powders — are chiefly: (*a*) acid potassium tartrate (cream of tartar), (*b*) acid phosphate, (*c*) some form of alum or aluminum sulphate; hence the classification of baking powders in three main groups — the "tartrate," the "phosphate," and the "alum" powders.

## EXPERIMENTS WITH LEAVENS AND LEAVENING AGENTS

**Egg, air, steam**

**169.** — Measure the unbeaten white of an egg in a tablespoon. Beat with a Dover egg beater and measure in a tablespoon. Result?

**170.** — Whip an unbeaten egg white with a wire whisk. What is the difference in volume? To what is this due? Notice the difference in size of air spaces where Dover beater is used as compared with wire whisk.

**171.** — Perform **169** and **170** each with an egg yolk.

Why is the increase in volume less noticeable?

What is the marked difference in the composition of the egg yolk as compared with the egg white?

- 172.** — *a.* Use the unbeaten egg to make popovers.  
*b.* Use the beaten egg to make sponge cake.  
*c.* Use the whipped egg to make Foamy Omelet. Compare texture of each product. Explain.  
*d.* Which egg white at time of using contains most water?

### Sodium bicarbonate

**173.** — Have ready for this and the succeeding experiments, the following :

baking soda	molasses
cream of tartar	chocolate
lemon juice	coffee
vinegar	hot water
sour milk	tomato
limewater	

Test with litmus and record reaction of each.

**174.** — Carbon dioxide precipitates the lime in a solution of lime and water. This can be shown by breathing through a tube, one end of which is immersed in a beaker of limewater. The white, chalky deposit which soon appears on the bottom of the beaker is carbonate of lime from the lime of solution and the carbon dioxide of the breath.

**175.** — Arrange 9 test tubes with perforated corks or rubber stoppers fitted with a bent tube to conduct gas from test tube into beaker of limewater.

In each dry test tube put  $\frac{1}{4}$  tsp. dry baking soda. Arrange perforated corks or stoppers with bent tube and have ready to adjust at once and conduct the gas given off into limewater (equal volume in each beaker).

When all is ready, put 1 tbsp. of an acid or hot water respectively into a test tube until all have been used. Several phenomena will be observed.

Note the evolution of gas, rapidity with which given off, comparative amount of carbonate of lime deposited. Conclude the corresponding amount of carbon dioxide given off.

Tabulate and compare the results.

**176.** — If the facilities of the chemical laboratory are available, make the experiment with cream of tartar quantitatively, using pure substances.

**177.** — In the experiment with cream of tartar, it will be necessary to add water before the action will take place.

What does this explain in regard to baking powder?

Why is corn starch or flour used in the manufacture of baking powder?

**178.** — Test  $\frac{1}{4}$  tsp. of baking powder with 1 tbsp. hot water. Assuming that the baking powder is a mixture of sodium bicarbonate and an acid salt, can you determine the nature of the latter by chemical analysis?

**179.** Prepare baking powder according to the following proportion :

$\frac{1}{2}$  lb. cream tartar  
 $\frac{1}{4}$  lb. baking soda  
 $\frac{1}{4}$  lb. corn starch  
 Sift six times

### Yeasts

**180.** — **Fermentation of molasses.** Into a common test tube or any glass vial, place a solution made by mixing one spoonful of molasses with ten spoonfuls of water. Rub up a little compressed yeast in water and put a few drops into the tube of molasses water. Set aside in a warm place and let it stand for about 24 hours. At the end of this time a vigorous fermentation will be seen. The liquid will have become somewhat cloudy, numerous bubbles can be seen rising through it, a froth forms on top, and a mass of sediment soon collects at the bottom. The bubbles are the carbon dioxide which is escaping into the air; the sediment at the bottom is the growing mass of yeast, and the alcohol, which looks like water, is dissolved in the liquid and is, of course, invisible.

**181.** — **Proof of the nature of the gas.** Prepare two tubes. In tube A place molasses and water inoculated with several drops of yeast, as in the last experiment. Put the cork in place and insert the other end of the tube into a second tube underneath the surface of some clear limewater. Set aside in a warm place until vigorous

fermentation occurs. Note the bubbles of gas that arise from the fermenting tube and bubble up through the limewater. The limewater soon becomes turbid, showing that the gas contains carbon dioxide.

**182.** — Rub a bit of yeast cake in a little water so as to make a slightly cloudy solution. Place a drop of the solution upon a microscope slide, cover with a cover glass, and examine first with a  $\frac{2}{3}$ -inch objective. Note that the water seems to be filled with very minute dots. Study with a higher power ( $\frac{1}{8}$  in. objective). Examine the *yeast cells*, noting the *shape* and comparative *size*.

**183.** — **Growing yeast.** With a glass rod, remove a drop of the sediment from growing yeast prepared as in Expt. 180. Place the drop on a slide, cover with a cover glass, and study as in the previous case. Remove some of the yeast found floating on the surface and study in the same way. Note that the yeast cells are in groups. Make a sketch of several groups, showing buds of various sizes. Note any other differences you can see between this growing yeast and the compressed yeast cake.

**184.** — **Effect of boiling.** Prepare two test tubes of molasses and water and inoculate each with a drop of yeast. Plug with cotton. Place one test tube in water and boil for ten minutes, and then leave both test tubes side by side in a warm place for two days, and determine whether the boiling has been sufficient to kill the yeast.

**185.** — **Wild yeast.** Prepare several test tubes of molasses and water as described and without plugging with cotton leave exposed in various places for two or three days. Determine by the appearance of bubbles whether fermentation occurs. If any change takes place in the liquids, examine with a microscope to determine whether yeasts have found entrance from the air or whether some other micro-organisms are growing in the solutions. Commonly, *bacteria* will be found more abundant than yeasts.

**186.** — **Effect of age on yeast.** Obtain an old sample of dried yeast cake. Prepare two tubes of molasses and water and inoculate one with a small quantity of the old yeast cake and two others with a similar quantity of a fresh cake. Set aside in a warm place and determine in which fermentation starts sooner, and in which it

is the more vigorous. Examine with a microscope after fermentation begins, to see if either contains other organisms besides yeast.

**187. — Action of yeast on bread.** Mix up a little flour and water to about the consistency of dough for bread making and divide into three lots, A, B, and C. Into A and B place a little compressed yeast. A and B are then to be placed in a warm place for five or six hours, while C, without the yeast, is to be baked at once. After A and B have risen under the influence of the yeast, bake B at once in the oven, while A is to be thoroughly kneaded and then baked. Compare the results of A, B, and C, noticing the difference in the textures of the bread.

**188. — Over raising.** Mix another lot of dough with yeast in the same way and allow it to rise in a warm place for twelve hours or more. Test with litmus paper to see if it is acid. Bake and taste to see if it has become sour.

**189. — Repeat Expt. 187,** comparing cold milk, scalded milk, and water as the liquid to be used in the dough. Note which dough sours first.

**190. — Bread raised by wild yeast.** Put a small amount of salt in a little milk and then allow it to stand in a warm place until a froth appears. Mix it with flour to make a dough and set aside to rise. Does the dough rise as rapidly and as satisfactorily as when yeast is used? Does the baked dough have the same taste?

**191. — Kumiss.** Into a quart of milk, put two tbsp. of granulated sugar and add about  $\frac{1}{16}$  of a compressed yeast cake. Put in a warm place and leave for 24 hours. Cool and taste. This will be kumiss or fermented milk. Is it sour?

**192. — Prepare equal weights of the following sugars:**

- |            |             |
|------------|-------------|
| a. sucrose | d. glucose  |
| b. maltose | e. levulose |
| c. lactose |             |

Dissolve each in small equal quantities of distilled water. (These solutions are for the next experiment.) Note any changes in appearance which may occur, and the rapidity with which each sugar



dissolves. Using a small measured fraction of each solution can you detect any difference in sweetness?

**193.** — *a.* Prepare small, equal weights of compressed yeast cake and mix one portion with each sugar solution. Turn the mixture into fermentation tubes and allow them to stand in a uniformly warm place.

*b.* Note in which tube fermentation begins and the rapidity with which it proceeds.

*c.* Compare the volume of gas collected during a unit length of time.

*d.* What do you conclude as to the relative fermentative qualities of the sugars used?

*e.* Of what significance is this?

### Flour Mixtures (Common designations)

Biscuits	Doughnuts
Muffins	Waffles
Bread	Griddlecakes
Rolls	Timbales
Cookies	Fillings and frostings
Cakes	Pastry
Fillings for pie	

### Classification of Flour Mixtures

Batters — beaten.

Doughs — mixed with knife or kneaded and rolled out.

### Proportion of Liquid to Flour

<i>Thin Batters</i>	<i>Thick Batters</i>
1-1	1-2
Griddlecakes	Cake
Waffles	Suet puddings
Fritters	Emergency biscuit
Popovers	Muffins
Dropped cookies	

*Soft Dough*

1-3  
Biscuit  
Crullers  
Bread  
Rolls

*Stiff Dough*

1-4  
Pastry  
Rolled cookies

**Flour Mixtures***Essential Ingredients :*

Flour  
Liquid  
Leavening agent  
Salt

*Non-essential Ingredients :*

Eggs  
Sweetening  
Shortening  
Flavoring

*Function of :*

*Flour :* to give substance or body.

*Liquid :* to hold dry ingredients together.

Milk

Water

Molasses

Wine

Eggs

Coffee

Cocoa

Brandy

*Leavening agent :* to produce a gas which separates the particles, and expands by the heat applied in baking, thus raising the mixture.

*Leavening Agents*

Baking powder

Yeast

Baking soda and an acid

*Salt :* to increase palatability.

*Shortening :* to make brittle by enriching.

Butter

Oleomargarine

Lard

Crisco

Suet

Drippings

Chicken fat

Refined oils

*Sweetening:*

Sugar	Molasses
Brown sugar	Karo
Glucose	

*Eggs:* to moisten  
to thicken  
to leaven  
to flavor

*Flavoring:* to increase palatability.

Spices	Fruit juices
Extracts	Fruit rinds

## Oven Temperature

Biscuit, "hot" . . . . . <sup>1</sup>	° F., <sup>1</sup>	° C.
Bread, "hot" . . . . .	° F.,	° C.
Cake { with butter "moderate" . . . . .	° F.,	° C.
{ without butter "cool" . . . . .	° F.,	° C.
Cookies, "moderate" . . . . .	° F.,	° C.
Muffins, "moderate" . . . . .	° F.,	° C.
Pastry, "hot" . . . . .	° F.,	° C.
Popovers, "very hot to moderate" . . . . .	° F.,	° C.
Rolls, "hot to moderate" . . . . .	° F.,	° C.

## REFERENCES

*Flour and Bread*

- ATWATER, H. W. Bread and Bread Making. United States Department of Agriculture, Farmers' Bulletin 389 (1910).
- BEVIER. Some Points in the Making and Judging of Bread. University of Illinois, Bulletin, vol. 10 (March 17, 1913).
- Bread Lesson. Demonstration. Iowa State College, Agricultural Department, Short Course Class Notes, No. 1.
- Bulletin on Idaho Bread Contest Clubs. Idaho State Department of Public Instruction.
- CALVIN. Essentials of Bread Making. Oregon Agricultural College, Domestic Science and Art Project, Circular, No. 6.

<sup>1</sup> Supply temperatures found by experiment (see pages 174-179).

GRANT. The Chemistry of Bread Making.

HARCOURT and PURDY. Flour and Bread Making. Ontario Agricultural College, Department of Agriculture, Bulletin 180 (1910).

HUNT. The Cereals in America.

JAGO. The Technology of Bread Making.

KOHMAN. Salt-raising Bread and Some Comparisons with Bread made with Yeast. Journal of Industrial and Engineering Chemistry, vol. 4, pages 20-30, 100-106 (1912).

LEACH. Food Inspection and Analysis.

LECLERC and JACOBS. Graham Flour. United States Department of Agriculture, Bureau of Chemistry, Bulletin 164 (1913).

NEWANETAL. Some Experiments on the Relative Digestibility of White and Whole Meal Breads. Journal of Hygiene, vol. 12, pages 119-143 (1912).

OSBORNE. The Proteins of the Wheat Kernel.

SHAW and GAUMNITZ. California White Wheats. Berkeley, California, Agricultural Experiment Station, Bulletin 212 (1911).

SIMMONS. Book of Bread.

SNYDER. Studies in Bread and Breadmaking. Bulletins 67, 101, 126 of the Office of Experiment Stations, United States Department of Agriculture.

SNYDER and WOODS. Wheat Flour and Bread. United States Department of Agriculture, Yearbook for 1903, pages 347-362.

VAN ARSDALE. Some Attempts to Standardize Oven Temperatures for Cooking Processes. Teachers College Bulletin, Technical Series No. 8 (1914).

WARDALL. Relation of Yeast to Flavor in Bread. Journal of Home Economics, vol. 2, pages 75-91 (1910).

WILEY. Cereals and Cereal Products. Part 9 of Bulletin 13 of the Bureau of Chemistry, United States Department of Agriculture.

WOODS and MERRILL. The Digestibility and Nutritive Value of Bread. Bulletins 85 and 143 of the Office of Experiment Stations, United States Department of Agriculture.

## CHAPTER XIII

### BATTERS AND DOUGHS

SELECT one of the following recipes for bread. Weigh each ingredient accurately (to the nearest gram). Weigh the finished product and calculate its food value and the weight and nutrients of the 100-calorie portion. Compare value and cost with those of cooked foods shown on pages 205 and 229.

#### White Bread

##### *Quick Process*

##### *Ingredients:*

3 c. flour	1 tsp. salt
1 c. milk or water	1 tbsp. butter
1 tsp. sugar	1 yeast cake

##### *Method:*

Scald the milk or boil the water, add to the salt, sugar, and butter and stir until dissolved. Cool until lukewarm, add yeast softened in  $\frac{1}{4}$  c. lukewarm water. Add one half the flour, beat until smooth. Cover and set in pan of warm water until doubled in bulk. Add the remainder of the flour and mix well. Put on a lightly floured board and knead until smooth and elastic. Mold into a loaf, place in a well-greased pan, cover, and let double its bulk. Bake in a hot oven 40-60 minutes.

##### *Slow Process*

As for quick process bread with these exceptions:

Use only  $\frac{1}{4}$  yeast cake. Add all the flour and knead once before setting to rise. Let rise overnight at room temperature instead of in a pan of warm water. In the morning knead, mold into loaves, and proceed as above.

**Graham Bread***Ingredients:*

$\frac{1}{2}$ c. scalded milk	$\frac{1}{4}$ c. lukewarm water
$\frac{1}{2}$ c. water	$\frac{1}{2}$ c. white flour
1 tsp. salt	graham or entire wheat flour
1 tbsp. butter	"to knead." The mixture
2 tbsp. molasses	should be easily handled
$\frac{3}{4}$ yeast cake	but not hard and dry

**Nut Bread**

1 c. chopped walnuts added after the first rising

**Gluten Bread***Ingredients:*

$\frac{1}{2}$ c. scalded milk	1 tbsp. butter
$\frac{1}{2}$ c. water	$\frac{1}{2}$ yeast cake
1 tsp. salt	$\frac{1}{4}$ c. lukewarm water
gluten flour "to knead"	

**BREADS WITHOUT YEAST****Boston Brown Bread — Steamed***Ingredients:*

1 c. rye meal	$1\frac{3}{4}$ tsp. soda
1 c. corn meal	1 tsp. salt
1 c. graham flour	$\frac{3}{4}$ c. molasses
2 c. sour milk or	$1\frac{3}{4}$ c. sweet milk

*Method:*

Mix and sift dry ingredients. Combine molasses and milk and add to first mixture. Fill greased molds  $\frac{3}{4}$  full of the mixture. Steam 3-4 hours.

**Brown Bread I — Baked***Ingredients:*

$\frac{2}{3}$ c. molasses	$3\frac{1}{2}$ c. graham flour
2 c. sour milk	$1\frac{1}{2}$ tsp. baking powder
3 eggs	2 tsp. baking soda
2 tbsp. melted butter	$\frac{1}{4}$ tsp. salt

*Method:*

Mix and sift dry ingredients. Add slightly beaten eggs to the liquid ingredients and combine mixtures. Bake in a slow oven  $1\frac{1}{2}$  hours. The batter should be a little thicker than for butter cakes.

**Brown Bread II***Ingredients:*

$\frac{1}{2}$ c. sugar	1 tsp. salt
$\frac{1}{2}$ c. molasses	2 c. graham flour
2 c. sour milk	$1\frac{1}{2}$ c. white flour
2 tsp. soda	1 c. nut meats
$\frac{1}{2}$ c. raisins	

*Method:*

Let stand 1 hour in bread pan. Bake in a moderate oven 40-50 minutes.

**Graham Bread***Ingredients:*

2 c. buttermilk	2 c. white flour
1 c. molasses	$1\frac{1}{2}$ tsp. soda
2 c. graham flour	1 tsp. salt

*Method:*

Let stand in bread pan 40 minutes. Bake in a moderate oven 45 minutes.

**Nut Bread I***Ingredients:*

2 eggs	4 c. white flour
$\frac{1}{2}$ c. sugar	$7\frac{1}{2}$ tsp. baking powder
2 c. milk	1 tsp. salt
1 c. chopped walnut meats	

*Method:*

Follow general directions for flour mixtures. Allow mixture to stand in the pan 20 minutes. Bake in a moderate oven 40-50 minutes.

**Nut Bread II***Ingredients :*

$\frac{1}{3}$ c. molasses	2 c. whole wheat flour
$\frac{3}{4}$ c. chopped walnuts	1 c. white flour
$1\frac{1}{2}$ c. sour milk	$1\frac{1}{3}$ tsp. soda
	$1\frac{1}{2}$ tsp. salt

*Method :*

Follow general directions for flour mixtures. Bake in bread pan in a moderate oven 40-45 minutes.

**Nut Bread III***Ingredients :*

1 c. molasses	1 tsp. salt
$1\frac{1}{2}$ c. water	2 tsp. baking powder
4 c. graham flour	$\frac{1}{2}$ tsp. soda
1 c. white flour	2 c. chopped walnuts

*Method :*

Follow directions for flour mixtures. Bake in bread pans in a moderate oven 35-40 minutes.

**ROLLS****Parker House Rolls***Ingredients :*

2 c. scalded milk	1 tsp. salt
2 tbsp. butter	1 yeast cake dissolved in
2 tbsp. sugar	$\frac{1}{2}$ c. lukewarm water
	flour

*Method :*

Add butter, sugar, and salt to milk ; when lukewarm, add softened yeast cake and three cups of flour. Beat, cover, and let rise until light ; cut down, and add enough flour to knead (it will take about two and one half cups). Let rise again, toss on slightly floured board, knead, pat, and roll out to one third inch thickness. Shape with a biscuit cutter, first dipped in flour.

Dip the handle of a case knife in flour, and with it make a crease through the middle of each piece ; brush over one half of each piece



with melted butter, fold and press edges together. Place in greased pan, one inch apart, cover, let rise, and bake in hot oven 12 to 15 minutes. As rolls rise they will part slightly and if hastened in rising are apt to lose their shape.

**NOTE:** Parker House Rolls may be shaped by cutting or tearing off small pieces of dough and shaping round like a biscuit; place in rows on floured board, cover and let rise 15 minutes. With the handle of large wooden spoon roll through center of each biscuit, brush edge of lower halves with melted butter, fold, press lightly, place in buttered pan one inch apart, cover, let rise and bake.

### Swedish Rolls

#### *Method:*

Prepare dough as for Parker House Rolls. When light, roll to  $\frac{1}{2}$  inch thickness. Spread with melted butter, sprinkle with sugar, cinnamon, and currants, and roll as closely as possible. Cut into slices 1 inch thick, allow to become very light, glaze, and bake about 20 minutes.

### Dorcas Rolls

#### *Ingredients:*

4 small potatoes	2 tbsp. sugar
2 c. scalded milk	2 tsp. salt
2 tsp. butter	$\frac{3}{4}$ yeast cake
$\frac{1}{4}$ c. lukewarm water	

#### *Method:*

Add hot riced potatoes to the milk, butter, salt, and sugar, softened yeast, and flour to make a soft batter. Let rise and add flour enough to make a dough. Knead and allow to double in bulk, knead again and shape in balls. Place on a greased sheet; let rise and bake 15-20 minutes in a hot oven.

### Bread Sticks

#### *Ingredients:*

1 c. milk	1 yeast cake softened in
$\frac{1}{4}$ c. butter	$\frac{1}{4}$ c. lukewarm water
$1\frac{1}{2}$ tbsp. sugar	white of an egg
$\frac{1}{2}$ tsp. salt	$3\frac{3}{4}$ c. flour

*Method:*

Prepare as bread and add the beaten egg after the yeast. When ready to shape, cut off small pieces of dough. Shape as small biscuits and roll on an *unfloured board* with the hands until 8 inches in length, keeping uniform in size and having the ends rounded. Bring the fingers close to, but not over, the ends of the sticks. Let rise and bake in a hot oven 8-10 minutes.

**Hot Cross Buns***Ingredients:*

1 c. milk	$\frac{3}{4}$ tsp. cinnamon
$\frac{1}{4}$ c. sugar	3 c. flour
2 tbs. butter	1 egg
$\frac{1}{2}$ tsp. salt	$\frac{1}{4}$ c. raisins
$\frac{1}{2}$ yeast cake softened in	$\frac{1}{4}$ c. currants
$\frac{1}{4}$ c. lukewarm water	

*Method:*

Dissolve sugar, salt, and butter in the scalded milk; when lukewarm, add dissolved yeast cake, cinnamon, flour and egg well beaten; when thoroughly mixed, add raisins, cover, and let rise overnight. In the morning shape in form of large biscuits, let rise, brush with beaten egg and bake 20 minutes; cool, and make a cross on top of each with confectioners' frosting.

**Luncheon Rolls***Ingredients:*

1 c. milk	1 tsp. salt
$\frac{1}{4}$ c. sugar	$\frac{1}{2}$ yeast cake
1 egg	$\frac{1}{4}$ c. lukewarm water
$\frac{1}{4}$ c. melted butter	$1\frac{1}{2}$ c. flour

*Method:*

Prepare dough as for Parker House Rolls, adding the beaten egg before the flour. Shape in balls or oblongs, let rise and bake.

## Glaze for Rolls

*Glaze I*

1 tsp. sugar  
2 tbsp. hot milk

Apply before baking.

*Glaze II*

yolk 1 egg  
2 tbsp. cold milk

Apply when half baked.

## SCORE CARD

## Bread

REVISED SCORE CARD OF MISS BEVIER<sup>1</sup>

<i>General appearance</i> . . . . .	20
Size (5)	
Shape (5)	
Crust (10)	
Color	
Character	
Depth	
<i>Flavor</i> . . . . .	35
Odor	
Taste	
<i>Lightness</i> . . . . .	15
<i>Texture</i> . . . . .	20
Coarse — fine	
Tough — tender	
Moist — dry	
Elastic or not	
<i>Color</i> . . . . .	5
<i>Grain</i> — Distribution of gas . . . . .	5
	100

<sup>1</sup> *University of Illinois Bulletin*, vol. 10, No. 25. (March, 1913.)

## SCORE CARD

## Raised Biscuits

<i>General appearance</i>	. . . . .	20
Size	(5)	
Shape	(5)	
Crust	(10)	
Color		
Character		
Depth		
<i>Flavor</i>	. . . . .	35
Taste		
Odor		
<i>Lightness</i>	. . . . .	15
<i>Crumb</i>	. . . . .	30
Texture	(20)	
Color	(5)	
Grain	(5)	

---

100

## Baking Powder Biscuits

*General Rules.*

Sift flour before measuring. Sift again with the baking powder and salt.

Cut in the fat with two knives. Butter, lard, crisco, drippings, or chicken fat may be used. Half butter and half lard is a good combination.

Add the liquid quickly. Toss and roll lightly on a floured board to  $\frac{1}{3}$  inch in thickness. Cut, moisten tops with milk, and bake 12-15 minutes in a hot oven.

## Wheat Biscuits

*Ingredients:*

- 2 c. flour
- 4 tsp. baking powder
- $\frac{1}{2}$  tsp. salt
- 2 tbs. fat
- $\frac{3}{4}$  c. milk

## Graham or Entire Wheat Biscuits

*Ingredients:*

- 1 c. graham flour
- 1 c. flour
- 5 tsp. baking powder
- $\frac{1}{2}$  tsp. salt
- 2 tbs. fat
- $\frac{3}{4}$ -1 c. milk
- 2 tbs. sugar

**Cheese Biscuits***Ingredients :*

- 2 c. flour
- 4 tsp. baking powder
- $\frac{1}{2}$  tsp. salt
- 1 tbsp. fat
- $\frac{3}{4}$  c. milk
- $\frac{1}{2}$  c. grated cheese

**Emergency Biscuit***Ingredients :*

- 1 c. milk
- $2\frac{1}{4}$  c. flour
- 4 tsp. baking powder
- 4 tbsp. shortening
- $\frac{1}{2}$  tsp. salt

Mix as for baking powder biscuits but drop by spoonfuls on a greased pan.

**Corn Meal Biscuit**

Same ingredients as Wheat Biscuit, substituting corn meal for  $\frac{1}{2}$  the flour. After cutting, turn over as for Parker House Rolls.

**Fruit Biscuit**

Shape as Swedish Rolls. Before rolling spread with  $\frac{1}{2}$  c. raisins  $\frac{1}{2}$  tsp. cinnamon 2 tbsp. sugar

**Bran Biscuit***Ingredients :*

- 1 c. bran
- 1 c. entire wheat flour
- $\frac{1}{4}$  c. molasses

- 1 egg
- 1 c. milk
- $\frac{1}{2}$  tsp. baking soda

$\frac{1}{4}$  tsp. salt

**SCORE CARD****Baking Powder Biscuits**

<i>General appearance</i> . . . . .	20
Size (5)	
Shape (5)	
Crust (10)	
<i>Flavor</i> . . . . .	40
<i>Lightness</i> . . . . .	10
<i>Texture</i> . . . . .	20
Coarse — fine	
Tough — tender	
Moist — dry	
<i>Color</i> . . . . .	5
<i>Grain</i> . . . . .	5
	<hr/> 100

## FOOD VALUES

### Baking Powder Biscuit

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Flour . . .	2 c.	222.4	24.9	2.2	166.5	786	.018	.055	.393	.0031
Salt . . .	$\frac{1}{2}$ tsp.									
Baking powder	3 tsp.	8					.006		1	
Butter . . .	$1\frac{1}{2}$ tbsp.	19	.19	16.57		150	.015	.005	.006	
Milk . . .	1 c.	202.8	6.68	8.12	9.79	140	.021	.324	.427	.0004
Total, cooked {	12 biscuits	313	31.78	26.89	176.31	1076	.06	.384	.826 <sup>1</sup>	.0035
100-Calorie Portion . .	1 biscuit	29.08	2.9	2.49	15	100	.005	.034	.074 <sup>1</sup>	.0003

### GRIDDLECAKES AND WAFFLES

(For General Method see below)

#### Griddlecakes Sweet Milk

##### Ingredients:

- 1 c. flour
- 2 tsp. baking powder
- $\frac{1}{4}$  tsp. salt
- 1 tbsp. melted butter
- 1 egg
- $\frac{3}{4}$  c. milk

#### Sour Milk

##### Ingredients:

- $2\frac{1}{2}$  c. flour
- $\frac{1}{2}$  tsp. salt
- 2 c. sour milk
- $1\frac{1}{4}$  tsp. soda
- 1 egg

#### Waffles Sweet Milk

##### Ingredients:

- $1\frac{3}{4}$  c. flour
- 3 tsp. baking powder
- $\frac{1}{2}$  tsp. salt
- 1 tbsp. melted butter
- 2 eggs
- 1 c. milk

#### Sour Milk

##### Ingredients:

- $1\frac{1}{4}$  c. flour
- $\frac{1}{2}$  tsp. soda
- $\frac{1}{4}$  tsp. salt
- 1 c. sour milk
- 2 eggs
- 2 tbsp. melted butter

<sup>1</sup> If a phosphate baking powder be used, the phosphorus content of the product will of course be much higher than is here shown.

**Corn Meal***Ingredients:*

- 1 c. corn meal
- 1 c. flour
- 4 tsp. baking powder
- 1 tsp. salt
- 4 tbsp. sugar
- 2 eggs
- 1 qt. scalded milk

Cook meal and milk 5 minutes  
in a double boiler.

**Corn Meal***Ingredients:*

- $\frac{1}{2}$  c. corn meal
- 1  $\frac{1}{2}$  c. boiling water
- 1 tsp. salt
- 1  $\frac{1}{2}$  c. milk
- 2 tbsp. sugar
- 2 tbsp. melted butter
- 2 c. flour
- 3 tsp. baking powder
- 2 eggs

Cook meal and water 20  
minutes in a double boiler.

**General Method***General Rules for Mixing.*

Sift flour, and sift with salt, sugar, and baking powder. Separate eggs, beat yolks thoroughly, and add to the milk. Add the liquids to the dry ingredients. Add the melted butter and fold in the stiffly beaten whites of eggs.

*General Rules for Frying.*

Grease irons carefully with lard, crisco, or salt pork. Fry mixture as soon as mixed. Serve immediately with butter and sirup or butter and powdered sugar.

*Griddlecakes.*

Drop mixture by spoonfuls on a hot griddle. When puffed, full of bubbles and cooked on edges, turn and brown the other side.

*Waffles.*

Put a tbsp. of mixture in each compartment near center of iron, cover, and mixture will spread to fill iron. Turn and brown other side.

**Swedish Timbale Cases***Ingredients:*

- $\frac{3}{4}$  c. flour
- $\frac{1}{2}$  tsp. salt

- $\frac{1}{2}$  c. milk
- 1 egg
- $\frac{1}{2}$  tsp. olive oil

*Method:*

Sift flour and salt. Add slightly beaten egg and the milk. Beat until smooth. Add the olive oil.

*To make Timbale Cases*

Plain and fluted irons of various shapes mounted on a long handle are used for shaping Swedish Timbale Cases.

To use: dip the iron into the hot fat, let stand two or three minutes, then drain and dip into the batter — held in measuring cup — to half an inch of the top of iron, return at once to the fat and hold there until the batter is crisp and lightly colored, then remove from the iron and turn upside down on soft paper to drain. If, on dipping the iron into the batter, the batter does not cling to it, the iron has not been heated enough. If the fat sizzles considerably and the case spreads out and drops from the iron, the mold is too hot. If the iron is lowered too far into the batter, the case will spread over the top of the iron and be troublesome to remove. The finished cases should be very crisp. A small, deep pan of fat gives best results.

**Fritters***Ingredients:*

1 c. flour	rind 1 lemon
2 tbsp. sugar	2 eggs
$\frac{1}{2}$ tsp. salt	$\frac{1}{2}$ c. milk

*Method:*

Same as Muffins (page 202).

**Apple Fritters***Method:*

Pare apples and cut in eighths, or pare, core, and cut in  $\frac{1}{4}$ -inch slices. Sprinkle with sugar, lemon juice, cinnamon, or nutmeg. Dip in batter and fry in deep fat. Sprinkle with powdered sugar and serve at once.

**Banana Fritters***Method:*

Remove skins from bananas. Scrape. Cut in halves lengthwise and then cut in 2 pieces crosswise or in 1-inch pieces. Sprinkle



with powdered sugar and lemon juice and let stand half an hour. Drain. Dip in batter and fry in deep fat. Sprinkle with powdered sugar or serve with Grape or Currant Jelly.

### Pineapple Fritters

#### *Method :*

Drain sirup from canned pineapple. Cut in pieces; dip in batter and fry in deep fat.

### Doughnuts I

#### *Ingredients :*

2 tsp. butter	1 c. flour
$\frac{1}{4}$ c. sugar	$\frac{1}{4}$ tsp. salt
1 egg	$\frac{3}{4}$ tsp. baking powder
2 tbs. milk	$\frac{1}{8}$ tsp. cinnamon

### Doughnuts II

3 eggs	5 c. flour
1 c. sugar	2 tsp. cream of tartar
1 c. milk	1 tsp. soda
$\frac{1}{4}$ tsp. nutmeg or mace	1 tsp. salt

#### *Method :*

Same as for cookies. The dough should be as soft as can be handled. Roll to  $\frac{1}{4}$  inch in thickness, cut in rings and fry in hot fat until golden brown. Turn often in the fat. Drain, cool, and sugar by shaking in a paper bag which contains a small amount of powdered sugar.

### Comforts

#### *Ingredients :*

1 c. milk	1 c. sugar
2 eggs	$2\frac{1}{2}$ c. flour
1 c. raisins	3 tsp. baking powder
	1 tsp. salt

#### *Method :*

Same as doughnuts. The mixture is a batter. Drop from spoon into hot fat; fry a light brown. Drain and sugar.

**Muffins***General Rules :*

Sift flour before measuring. Sift again with baking powder, salt, and sugar. Beat eggs slightly, add the milk and pour this mixture gradually into the dry ingredients. Add the melted butter. Bake in greased muffin tin in a moderate oven 20-25 minutes.

**One-egg Muffins***Ingredients :*

2 c. flour	2 tbsp. sugar
4 tsp. baking powder	1 c. milk
$\frac{1}{2}$ tsp. salt	2 tbsp. melted butter
1 egg	

**Wheat Muffins***Ingredients :*

2 c. flour	1 c. milk
2 tsp. baking powder	2 tbsp. melted butter
$\frac{1}{2}$ tsp. salt	2 eggs

**Entire Wheat or Graham Muffins***Ingredients :*

1 c. graham flour	1 tbsp. sugar
1 c. flour	1 egg
3 tsp. baking powder	1 c. milk
1 tsp. salt	2 tbsp. melted butter

**Corn Meal Muffins***Ingredients :*

1 c. flour	$\frac{1}{2}$ tsp. salt
1 c. corn meal	1 egg
2 tbsp. sugar	1 c. milk
4 tsp. baking powder	2 tbsp. melted butter

**Berkshire Muffins***Ingredients:*

$\frac{1}{2}$ c. corn meal	} Let stand	2 tbsp. sugar
$\frac{2}{3}$ c. scalded milk		$\frac{1}{2}$ tsp. salt
$\frac{1}{2}$ c. cooked rice	5 minutes	1 egg
$\frac{1}{2}$ c. flour	3 tsp. baking powder	2 tbsp. melted butter

**Bran Muffins***Ingredients:*

2 c. bran	1 tsp. soda	3 tbsp. molasses
1 c. flour	$\frac{1}{4}$ c. butter	$1\frac{1}{2}$ c. sour milk

*Method:*

Rub butter into the dry ingredients. Add the liquids. Bake in a hot oven.

**Bran Muffins with Corn***Ingredients:*

1 c. corn meal	1 egg
1 c. white flour	$1\frac{1}{2}$ c. milk
1 c. bran	2 tbsp. molasses
2 tbsp. melted butter	1 tsp. salt
$1\frac{1}{2}$ tsp. soda	} or $2\frac{1}{2}$ tsp. baking powder
3 tsp. cream tartar	

**Rice Muffins***Ingredients:*

3 c. flour	$1\frac{1}{3}$ c. milk
1 c. cooked rice	1 egg
2 tbsp. baking powder	3 tbsp. melted butter
3 tbsp. sugar	$\frac{2}{3}$ tsp. salt

Combine the rice and milk.

**Hominy Sticks***Ingredients:*

1 c. corn meal	$\frac{1}{2}$ c. hot cooked hominy or rice
$\frac{3}{4}$ c. flour	$\frac{1}{4}$ c. melted butter
3 tsp. baking powder	1 c. milk
$\frac{1}{2}$ tsp. salt	1 egg

*Method:*

Bake in Bread Stick pans.

**Blueberry Muffins***Ingredients:*

$\frac{1}{3}$ c. butter	2 c. flour
$\frac{1}{4}$ c. sugar	1 tsp. baking powder
1 egg	1 c. blueberries
$\frac{3}{4}$ c. milk	

*Method:*

Fold in the blueberries last.

**Southern Pone***Ingredients:*

1 c. corn meal	2 eggs
2 c. milk	3 tbsp. butter
1 tsp. salt	1 tsp. baking powder

*Method:*

Scald milk and add gradually the meal, salt, and butter. Cool slightly and add eggs, well beaten, and the baking powder. Turn into a buttered, earthen dish and bake in a moderate oven 35 minutes. Cut in pie-shaped pieces for serving.

**Southern Spoon Corn Bread***Ingredients:*

2 c. white corn meal	yolks 2 eggs
$2\frac{1}{2}$ c. boiling water	whites 2 eggs
$1\frac{1}{2}$ tbsp. melted butter	$1\frac{1}{2}$ c. buttermilk
$1\frac{1}{2}$ tsp. salt	1 tsp. baking soda

*Method:*

Add meal gradually to the boiling water and let cool. Add butter, salt, egg yolks slightly beaten, and buttermilk mixed with soda. Beat 2 minutes and fold in whites of eggs beaten until stiff. Turn into a buttered earthen dish and bake in hot oven 40 minutes. Serve at breakfast. Eat with spoon.

## SCORE CARD

## Muffins

<i>General Appearance</i> . . . . .	25
Size (5)	
Shape (10)	
Crust (10)	
Color	
Character	
Depth	
<i>Flavor</i> . . . . .	35
Taste	
Odor	
<i>Texture</i> . . . . .	30
Lightness (10)	
Tenderness (10)	
Grain (10)	
<i>Color</i> . . . . .	10
	100

## FOOD VALUES

## Muffins

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Flour . . . .	1 c.	111.2	12.45	1.11	83.28	393	.0098	.027	.196	.0015
Sugar . . . .	1 tsp.	4.8			4.8	19	.0007			
Butter . . . .	1 tbsp.	14	.14	11.9	108	108	.0106	.003	.004	
Milk . . . .	$\frac{1}{2}$ c.	122	4.02	4.88	6.1	84	.0112	.193	.255	.0002
Baking powder	2 tsp.	7.7					.003		1	
Egg . . . .	1	45.3	6.07	4.75		67	.03	.040	.161	.0012
Total, cooked 100-Calorie	6	242.2	22.68	22.64	94.18	671	.0653	.264	.615 <sup>1</sup>	.0029
Portion . .	1	35.08	3.37	3.37	14.04	100	.009	.036	.086 <sup>1</sup>	.0004

<sup>1</sup> See footnote, p. 198.

**Popovers***Ingredients:*

1 c. flour	$\frac{7}{8}$ c. milk
$\frac{1}{4}$ tsp. salt	1-2 eggs
$\frac{1}{2}$ tsp. melted butter (may be omitted)	

*Method:*

Mix salt and flour, sift into bowl. Make an indentation in flour and drop in the unbeaten egg. Add the milk gradually, stirring in widening circles from the middle. If a little lumpy, beat for a minute with a Dover egg beater. Turn into hot buttered custard cups or gem pans. Bake in a hot oven. Have the oven very hot for the first 15 minutes, then reduce temperature and continue baking 30 to 35 minutes longer.

**Graham Popovers***Ingredients:*

$\frac{2}{3}$ c. entire wheat flour	$\frac{7}{8}$ c. milk
$\frac{1}{3}$ c. flour	1 egg
$\frac{1}{4}$ tsp. salt	$\frac{1}{2}$ tsp. melted butter

Prepare and bake as described under Popovers.

**Cream Puffs I***Ingredients:*

$\frac{1}{2}$ c. butter	4 eggs
1 c. boiling water	1 c. pastry flour

*Method:*

Put butter and water in saucepan and heat to boiling point, add flour all at once and beat vigorously. Remove from fire as soon as mixed, and add unbeaten eggs one at a time, beating until thoroughly mixed between the addition of eggs. Drop by spoonfuls on a buttered sheet  $1\frac{1}{2}$  inches apart, shaping as nearly circular as possible, having mixture slightly piled in center. Bake 30 minutes in a moderate oven. With a sharp knife make in each an incision large enough to admit cream filling.

**Cream Puffs II***Ingredients:*

$\frac{1}{2}$ c. butter (scant)	$\frac{1}{2}$ c. flour
$\frac{1}{2}$ c. boiling water	2 eggs
fruit preserve or marmalade	

Put butter in small saucepan and pour on water. When water again reaches boiling point add flour all at once and stir until mixture leaves sides of saucepan, cleaving to spoon. Remove from fire and add eggs unbeaten, one at a time, beating mixture between addition of eggs. Drop by spoonfuls into hot fat and fry until well puffed and brown. Drain. Make an opening and fill with jelly, preserve, or marmalade. Sprinkle with powdered sugar.

**Eclairs**

Shape cream puff mixture  $4\frac{1}{2}$  inches long and 1 inch wide by forcing through a pastry bag and tube. Bake 25 minutes in a moderate oven. Fill with vanilla, coffee, or chocolate cream filling. Frost with chocolate frosting.

**Cream Filling***Ingredients:*

$\frac{7}{8}$ c. sugar	2 c. scalded milk, chocolate,
$\frac{1}{3}$ c. flour	or coffee
$\frac{1}{8}$ tsp. salt	1 tsp. vanilla or
2 eggs	$\frac{1}{2}$ tsp. lemon juice

*Method:*

Mix dry ingredients in double boiler and pour the liquid in gradually. Cook the mixture 10 minutes. Add the eggs slightly beaten and cook 2 minutes. Cool and flavor.

**FLOUR PASTES****Macaroni; Spaghetti; Noodles****Boiled Macaroni or Spaghetti***Ingredients:*

$\frac{3}{4}$ c. macaroni or spaghetti broken in pieces	2 qts. boiling water
1 c. cream	1 tbsp. salt

*Method :*

Cook macaroni or spaghetti in boiling salted water 20 minutes, or until soft ; drain in strainer, pour over it cold water to prevent pieces from adhering ; add cream, reheat, and season with salt.

**Noodles***Ingredients :*

1 egg

 $\frac{1}{2}$  tsp. salt

2 c. flour

*Method :*

Beat egg slightly, add salt, and flour enough to make a very stiff dough ; knead on a slightly floured board, and roll as thin as possible, which may be as thin as paper. Cover with towel and set aside for 20 minutes ; then cut in fancy shapes — using sharp knife or French vegetable cutter ; or the thin sheet may be rolled like a jelly roll, cut in thin slices and pieces unrolled.

When eggs are expensive, one tablespoon of water may be beaten with each egg.

When noodles are perfectly dry, put them into a glass jar or paste-board box. They will keep indefinitely.

**Baked Macaroni with Cheese**

Put a layer of boiled macaroni in buttered baking dish, sprinkle with grated cheese ; reheat, pour over white sauce, cover with buttered crumbs, and bake until crumbs are brown.

**Macaroni, Italian Style***Ingredients :*

1 c. macaroni

 $1\frac{1}{2}$  c. scalded milk

2 tbsp. butter

 $\frac{2}{3}$  c. grated cheese

2 tbsp. flour

salt and paprika

 $\frac{1}{4}$  c. finely chopped cold boiled ham*Method :*

Break macaroni in one-inch pieces and cook in boiling, salted water, drain, and reheat in sauce made of butter, flour, and milk to which is added cheese. As soon as cheese is melted, season with salt



and paprika and turn on to a serving dish. Sprinkle with ham and garnish with parsley.

### Macaroni with Cheese and Tomato Sauce

#### Ingredients:

1 c. boiled macaroni	2 c. tomato sauce
$\frac{1}{2}$ c. grated cheese	seasonings

#### Method:

Arrange the macaroni in a buttered baking dish, pour over this the tomato sauce and cheese, cover with buttered crumbs and heat in a moderate oven until the crumbs are brown.

Grated cheese may be sprinkled on the top instead of buttered crumbs.

### Spaghetti Loaf

#### Ingredients:

1 c. scalded cream or milk	1 c. grated cheese
1 c. bread crumbs	1 tbsp. onion juice
1 c. cooked spaghetti	1 tbsp. chopped parsley
3 eggs	1 tbsp. green pepper
1 tbsp. red pepper or pimento	

#### Method:

Scald cream, add the bread crumbs, cooked spaghetti and cheese, and eggs slightly beaten. Chop green and red peppers and add to first mixture. Pour into a buttered bread pan, place in hot water, and bake in a slow oven until firm and slightly browned. Turn on a platter and surround with tomato sauce.

## COOKIES

### CLASSIFICATION

<i>Dropped</i>	<i>Rolled</i>	<i>Spread</i>
Peanut	Sugar	Brownies
Boston	Chocolate	Fairy gingerbread
Oatmeal I	Molasses	Rolled wafers
Oatmeal II	Orange circles	Chocolate chips
Sponge drops	Hermits	

Margarets (fancy meringue pans)  
Chocolate wafers

Date meringues  
Vanilla wafers

### *Dropped:*

*Thick batters.* Drop from tsp. on well-greased sheets 1 inch apart. Sponge Cookies may be put together with marshmallows or boiled frosting.

### *Rolled:*

*Stiff doughs.* Chill before rolling out. Use fancy cutters. Garnish with raisins, currants, sugar, spice, candied cherries, angelica, orange peel.

*Filled cookies.* Two cookies may be put together with fruit and nut filling before baking.

*Two colors.* A sugar cookie cut in fancy shape may be placed on a round chocolate cookie before baking.

### *Spread:*

*Thick batters.* Spread with spatula on well-greased Russian sheets or on the back of a dripping pan. Cut in squares or oblongs or cut and roll while hot.

*Nut wafers.* Sprinkle chopped nuts on mixture before baking.

## General Rules for Mixing Cookies

Eggs should not be separated; otherwise proceed as for cake. Bake one cookie to see if mixture is of proper consistency.

### Dropped Cookies

#### Chocolate Wafers

#### *Ingredients:*

4 tbsp. butter	$\frac{1}{3}$ c. flour
8 tbsp. sugar	$\frac{1}{8}$ tsp. salt
1 egg	$\frac{1}{8}$ tsp. vanilla
1 oz. chocolate	$\frac{1}{2}$ c. nuts

**Oatmeal I***Ingredients :*

4 tbsp. butter	$\frac{1}{2}$ c. nuts
3 tbsp. lard	$1\frac{1}{2}$ c. flour
1 c. sugar	$\frac{1}{2}$ tsp. salt
1 egg	$\frac{1}{4}$ tsp. soda
5 tbsp. milk	$\frac{3}{4}$ tsp. cinnamon
$1\frac{3}{4}$ c. rolled oats	$\frac{1}{2}$ tsp. cloves
$\frac{1}{2}$ c. raisins	$\frac{1}{2}$ tsp. allspice

**Oatmeal II***Ingredients :*

1 tbsp. butter	2 c. rolled oats
1 c. sugar	2 eggs
$\frac{1}{2}$ tsp. salt	1 tsp. baking powder.
	1 tsp. vanilla

**Boston Cookies***Ingredients :*

1 c. butter	$\frac{1}{2}$ tsp. salt
$1\frac{1}{2}$ c. sugar	1 tsp. cinnamon
3 eggs	1 c. chopped nuts
1 tsp. soda	(hickory or English walnuts)
$1\frac{1}{2}$ tbsp. cold water	$\frac{1}{2}$ c. currants
$3\frac{1}{2}$ c. flour	$\frac{1}{2}$ c. raisins, seeded (or seedless), chopped

**Margarets***Ingredients :*

$\frac{1}{3}$ c. butter	1 egg well beaten
$\frac{1}{3}$ c. powdered sugar	$\frac{7}{8}$ c. flour
$\frac{1}{3}$ c. molasses	1 c. pecan meats chopped

Garnish top of each with half a pecan.

**Drop Molasses Cookies***Ingredients :*

1 c. molasses	1 c. sour cream or
1 c. sugar	$\frac{2}{3}$ c. butter
1 egg	1 tsp. each :
1 tsp. soda	ginger
1 tsp. baking powder	cinnamon
1 c. boiling water	$\frac{3}{4}$ tsp. salt
	about 3 c. flour

*Method :*

Follow general directions for flour mixtures. Spread the mixture in a well-greased dripping pan and bake in a moderate oven 10-20 minutes. Cut in squares and remove with spatula to a rack or cloth to cool.

**Peanut Cookies***Ingredients :*

2 tbsp. butter	$\frac{1}{2}$ c. flour
$\frac{1}{4}$ c. sugar	$\frac{1}{8}$ tsp. salt
1 egg	2 tbsp. milk
1 tsp. baking powder	$\frac{1}{2}$ tsp. lemon juice
	$\frac{1}{2}$ c. chopped nuts

**Meringues***Ingredients :*

whites 4 eggs	$1\frac{1}{4}$ c. powdered sugar or
$\frac{1}{2}$ tsp. vanilla	1 c. granulated sugar

Beat whites until stiff, add gradually the sugar and continue beating until mixture will hold shape, and add flavoring. Shape with spoon or pastry bag and tube on wet board covered with letter paper or on greased paper. Bake 30 minutes in a very slow oven. Remove from paper when cold.

**Date Meringues***Ingredients :*

$\frac{1}{2}$ lb. dates	whites 4 eggs
$\frac{1}{2}$ lb. almonds	1 c. sugar

*Method :*

Wash and stone dates. Blanch almonds. Mix with dates and chop finely. Beat whites of eggs until stiff. Add sugar gradually and continue beating. Fold in date mixture. Drop by spoonfuls on greased paper. Bake in a "moderate" oven until delicately brown (recording the temperature). Remove at once from paper.

**Sponge Drops***Ingredients :*

whites 3 eggs	$\frac{1}{3}$ c. flour
$\frac{1}{3}$ c. powdered sugar	$\frac{1}{8}$ tsp. salt
yolks 2 eggs	$\frac{1}{4}$ tsp. vanilla

**Rolled Cookies****Orange Circles***Ingredients :*

3 tbsp. butter	1 $\frac{3}{4}$ c. flour
$\frac{2}{3}$ c. sugar	salt
rind 1 orange	juice 1 orange

**Ginger Snaps***Ingredients :*

1 c. butter	4 c. flour
1 c. sugar	1 tsp. soda
1 c. molasses	1 tbsp. ginger
	1 egg

**Molasses***Ingredients :*

$\frac{1}{3}$ c. butter	$\frac{1}{2}$ tsp. salt
$\frac{1}{3}$ c. boiling water	1 tbsp. ginger
$\frac{2}{3}$ c. molasses	1 tsp. cinnamon
1 tsp. soda	$\frac{1}{2}$ c. sugar
	flour

**Sugar Cookies***Ingredients:*

$\frac{1}{2}$ c. butter	$2\frac{1}{4}$ c. flour
1 c. sugar	2 tsp. baking powder
1 egg	$\frac{1}{2}$ tsp. salt
$\frac{1}{4}$ c. milk	$\frac{1}{3}$ tsp. vanilla

**Vanilla Wafers***Ingredients:*

$\frac{1}{3}$ c. butter and lard in equal proportions	2 c. flour
1 c. sugar	2 tsp. baking powder
1 egg	$\frac{1}{2}$ tsp. salt
$\frac{1}{4}$ c. milk	2 tsp. vanilla

**Thin Cookies***Ingredients:*

$\frac{1}{2}$ c. butter	2 tsp. baking powder
1 c. sugar	flour
1 tbsp. milk	2 eggs

**Chocolate Cookies***Ingredients:*

$\frac{1}{2}$ c. butter	$2\frac{1}{2}$ c. flour
1 c. sugar	2 tsp. baking powder
1 egg	$\frac{1}{2}$ tsp. salt
$\frac{1}{4}$ c. milk	$\frac{1}{3}$ tsp. vanilla
	2 oz. chocolate

**Hermits***Ingredients:*

$\frac{3}{4}$ c. butter	$2\frac{1}{2}$ c. flour
1 c. brown sugar	$\frac{1}{2}$ tsp. salt
2 eggs	1 tsp. cinnamon
$\frac{3}{4}$ tsp. soda	$\frac{1}{2}$ tsp. each clove, mace, nutmeg
1 tbsp. hot water	1 c. raisins

**Spread Cookies****Chocolate Chips***Ingredients :*

$\frac{1}{2}$  c. butter  
 1 c. sugar  
 2 eggs

4 tbsp. melted chocolate  
 1 tsp. vanilla  
 1 c. flour

**Chocolate Brownies***Ingredients :*

1 c. sugar  
 $\frac{1}{4}$  c. melted butter  
 1 egg unbeaten  
 2 oz. chocolate melted

$\frac{3}{4}$  tsp. vanilla  
 $\frac{1}{2}$  c. flour  
 $\frac{1}{2}$  c. walnut meats cut in pieces

*Method :*

Mix ingredients in order given. Line a seven-inch square with paraffin paper. Spread mixture evenly in pan and bake in a slow oven (recording the temperature). As soon as taken from oven turn from pan, remove paper, and cut in strips.

**Nut Wafers***Ingredients :*

$\frac{1}{4}$ c. butter (chicken fat may be used)	2 tbsp. milk
$\frac{3}{4}$ c. sugar	$\frac{1}{2}$ tsp. salt
1 egg	1 tsp. baking powder
$1\frac{1}{3}$ c. flour	1 tsp. vanilla
	$\frac{1}{3}$ c. nut meats (chopped)

**Fairy Gingerbread***Ingredients :*

$\frac{1}{2}$ c. butter	$\frac{1}{2}$ c. milk
1 c. light brown sugar	$1\frac{7}{8}$ c. flour
2 tsp. ginger	

SCORE CARDS

**Rolled Cookies**

<i>General appearance</i> . . . . .	30
Uniformity (5)	
Size (5)	
Shape (10)	
Color (5)	
Surface (5)	
<i>Texture</i> . . . . .	20
Lightness (10)	
Color (5)	
Crispness (5)	
<i>Flavor</i> . . . . .	50
Taste (25)	
Odor (25)	
	<hr/> 100

**Dropped Cookies**

<i>General appearance</i> . . . . .	30
Uniformity (5)	
Shape (10)	
Size (5)	
Color (5)	
Surface (5)	
<i>Texture</i> . . . . .	20
Lightness (5)	
Tenderness (10)	
Color (5)	
<i>Flavor</i> . . . . .	50
	<hr/> 100



## FOOD VALUES

## Molasses Cookies

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Molasses .	1 c.	326.3	8.07		233.05	965	.042	1.118	.965	.048
Butter .	$\frac{1}{4}$ c.	56.7	.57	48.2		436	.04	.013	.017	
Flour .	3 c.	333.6	37.36	3.34	249.87	1178	.03	.082	.589	.0047
Soda .	$\frac{1}{2}$ tsp.	2.1					.0004			
Salt .	2 tsp.	9.2					.0006			
Ginger .	1 tbsp.	6					.003			
Totals, { cooked {	24 large }	628.4	46.46	51.56	482.92	2579	.116	1.213	1.561	.0527
100-Calorie Portion	1 large	23.38	1.75	1.96	18.45	100	.004	.047	.062	.0020

## Hermits

Butter .	$\frac{1}{3}$ c.	84.2	.842	71.57		647.5	.0425	.019	.025	
Sugar .	$\frac{2}{3}$ c.	137			137	548	.02			
Egg .	1	44.5	5.96	4.67		66	.036	.039	.158	.0012
Milk .	2 tbsp.	42.8	1.41	1.71	2.14	30	.0028	.069	.09	.0001
Flour .	$1\frac{3}{4}$ c.	194.6	21.79	1.94	145.75	688	.021	.048	.344	.0027
Raisins ,	$\frac{1}{3}$ c.	51.3	1.33	1.49	39.03	175	.0117	.035	.14	.0017
Spices .		11.3								
Total, cooked	52	479	38.91	81.39	323.92	2153	.134	.210	.757	.0057
100-Calorie Portion	small 3	22.22	1.55	3.77	15.2	100	.0057	.0105	.0378	.0002

## CHAPTER XIV

### CAKE

#### CAKES WITH BUTTER

##### *General Rules for Mixing.*

Measure all ingredients, and grease the pans. Mix and sift dry ingredients except sugar. Cream butter by continued rubbing against the bowl with a wooden spoon. (Any edible fat may be used in place of butter.) Add the sugar gradually and continue creaming until mixture is smooth. Beat yolk of egg until thick and lemon-colored; add to the butter and sugar. Add the flour and milk alternately; add vanilla. Beat whites until stiff and dry; cut and fold into the mixture. When fruit or nuts are used, save out a little flour to cover them and add to the cake just before the whites of the eggs. Fill greased pans half full, with sides well filled and a slight depression in the center.

##### *General Rules for Baking.*

Temperature of oven — moderate.

Time depends on thickness of cake.

- a. cup cakes, 12-15 minutes
- layer cakes, 20-30 minutes
- loaf cakes, 30-40 minutes
- b. quarters of time
  - 1. begins to rise
  - 2. continues rising; begins to brown
  - 3. finishes browning
  - 4. shrinks from pan

*Care after Baking.*

- a. loosen edges with knife
- b. invert on cooler
- c. turn right side up after a few minutes

**Standard Cake***Ingredients:*

$\frac{1}{4}$ c. butter	$\frac{1}{2}$ c. milk
1 c. sugar	$1\frac{1}{2}$ c. flour
2 eggs	$2\frac{1}{2}$ tsp. baking powder
1 tsp. lemon juice or $\frac{1}{2}$ tsp. vanilla	

*Modifications:**Spice*

1 tsp. spice sifted with the flour

*Nut*

1 c. chopped nuts added before folding in the whites

*Chocolate*

2 oz. melted and added after adding the yolks

*Currant*

$\frac{1}{2}$  c. added before folding in the whites

*Ribbon*

Double the recipe and bake  $\frac{2}{3}$  as 2 plain layers. To remaining  $\frac{1}{3}$  add 1 tbsp. molasses, 1 tsp. spice, and  $\frac{2}{3}$  c. raisins.

**White Cake***Ingredients:*

$\frac{1}{2}$ c. butter	2 c. flour
1 c. sugar	4 tsp. baking powder
whites 4 eggs	$\frac{1}{2}$ c. milk
$\frac{1}{2}$ tsp. almond extract	

**Spanish Cake***Ingredients:*

$\frac{1}{2}$ c. butter	$1\frac{3}{4}$ c. flour
1 c. sugar	3 tsp. baking powder
$\frac{1}{2}$ c. milk	$1\frac{1}{2}$ tsp. cinnamon
2 eggs	$\frac{1}{4}$ tsp. salt

**Chocolate Cake I***Ingredients:*

3 oz. chocolate	$\frac{1}{2}$ c. sugar	$\frac{1}{2}$ c. milk
-----------------	------------------------	-----------------------

Boil until thickens to a paste and cool. Add to:

$\frac{1}{2}$ c. butter	2 c. flour
1 c. sugar	1 tsp. baking soda
2 eggs	$\frac{1}{2}$ tsp. salt
1 tsp. vanilla	$\frac{1}{2}$ c. milk

**Chocolate Cake II***Ingredients:*

2 oz. chocolate	} Boil until it thickens to a paste and cool
4 tbsp. butter	
$\frac{1}{2}$ c. boiling water	

Add

1 c. sugar	1 c. flour
1 egg	$\frac{3}{4}$ tsp. soda
$\frac{1}{4}$ c. sour milk	

**Lady Baltimore Cake***Ingredients:*

1 c. butter	$3\frac{1}{2}$ c. flour
2 c. sugar	2 tsp. baking powder
1 c. milk	whites 6 eggs

**Lady Baltimore Cake Filling**

3 c. sugar	1 c. water
------------	------------

Boil to thread stage and pour on stiffly beaten whites of 3 eggs. When begins to thicken add 1 c. chopped raisins, pecans, and figs.

**Pound Cake***Ingredients:*

1 lb. butter	1 lb. flour
1 lb. sugar	$\frac{1}{2}$ tsp. mace
10 eggs	2 tbsp. brandy

**Gold Cake***Ingredients :*

8 yolks of eggs	$2\frac{1}{2}$ c. flour
$\frac{2}{3}$ c. butter	1 tsp. cream of tartar
$1\frac{1}{2}$ c. sugar	$\frac{1}{2}$ tsp. soda
$\frac{2}{3}$ c. milk	1 tbsp. vanilla

*Method :*

Mix soda and flour and sift 3 times. Cream butter and sugar, beat yolks until very light, add cream of tartar, then add this to the butter and sugar. Mix well and add milk, flour, and flavoring. This recipe is particularly good for small cakes.

**Date Loaf Cake***Ingredients :*

1 lb. dates (after stoning)	1 c. flour
1 lb. pecans — shelled	4 eggs
1 c. sugar	$1\frac{1}{2}$ tsp. baking powder
1 tsp. brandy or	$\frac{1}{4}$ tsp. salt
	1 tsp. vanilla

*Method :*

Wash and stone dates. Wash pecans and add to date pulp. Chop slightly. Beat yolks of eggs until foamy and mix with the sugar through the date and nut mixture. Add flavoring and the sifted dry ingredients and fold in the beaten whites. Bake as a loaf 50 minutes in a moderate oven.

**Orange Loaf Cake***Ingredients :*

2 c. sugar	4 eggs
$\frac{1}{2}$ c. butter	$2\frac{1}{2}$ c. flour
$\frac{1}{2}$ c. orange juice	3 tsp. baking powder
grated rind of 1 orange	$\frac{1}{2}$ tsp. salt

*Method :*

Cream the butter, add the sugar and yolks of the eggs. Add to this the grated rind of 1 orange. Mix and sift the dry ingredients and add alternately with the liquid to the first mixture. Line a deep pan with paraffin paper and allow the cake to bake in moderate oven 35-40 minutes.

**Coffee Cake***Ingredients:*

1 c. butter	1 tsp. cinnamon
2 c. sugar	$\frac{1}{2}$ tsp. cloves
4 eggs	$\frac{1}{2}$ tsp. mace
2 tbsp. molasses	$\frac{1}{2}$ tsp. allspice
1 c. cold boiled coffee	$\frac{3}{4}$ c. raisins
$3\frac{3}{4}$ c. flour	$\frac{3}{4}$ c. currants
5 tsp. baking powder	$\frac{1}{4}$ c. citron
2 tbsp. brandy	

**Apple Sauce Cake***Ingredients:*

1 c. butter	3 c. flour
1 c. sugar	1 tsp. soda
1 egg	$\frac{1}{2}$ tsp. allspice, cinnamon, and clove
1 c. molasses	$\frac{1}{2}$ grated nutmeg
1 c. apple sauce (unsweetened)	$\frac{1}{2}$ c. raisins and currants

**Fruit Cake***Ingredients:*

1 lb. butter	12 eggs
1 lb. brown sugar	$\frac{1}{2}$ lb. almonds
1 lb. flour	2 tsp. nutmeg
3 lb. raisins	2 tsp. cloves
3 lb. currants	2 tsp. cinnamon
1 lb. mixed fruit peel	3 tbsp. vanilla
juice of 2 lemons	

**Molasses Layer Cake***Ingredients:*

1 c. molasses	1 c. hot water
$\frac{1}{2}$ c. sugar	2 eggs
1 c. shortening	$2\frac{1}{2}$ c. flour
2 tsp. soda	1 tsp. cinnamon
1 tsp. cloves	

*Method:*

Follow directions for flour mixtures and bake as a layer cake.

**Filling for Molasses Cake***Ingredients:*

1 c. milk	$\frac{1}{2}$ c. sugar
$\frac{1}{4}$ cake chocolate	1 tbsp. cornstarch
$\frac{1}{4}$ tsp. vanilla	

*Method:*

Melt the chocolate in a double boiler. Mix the sugar and cornstarch and add gradually to the melted chocolate alternately with the milk. Stir the mixture with a wooden spoon constantly in order to prevent lumps and to make a smooth paste. Allow the whole to cook in a double boiler 15 minutes. Add flavoring, and when custard has cooled slightly, use as a filling for the molasses cake.

NOTE: Whipped cream may be used as the upper covering. This cake is best used as a dessert.

**Canned Raspberry Cake***Ingredients:*

2 eggs	$\frac{1}{2}$ nutmeg
1 c. brown sugar	1 tbsp. cinnamon
$\frac{1}{2}$ c. butter	1 tbsp. sour milk
1 c. canned strawberries or raspberries	1 tsp. soda
	1 c. flour

**Hot Water Ginger Cake***Ingredients:*

1 c. molasses	1 tsp. soda
$\frac{1}{2}$ c. boiling water	$1\frac{1}{4}$ tsp. ginger
$2\frac{1}{4}$ c. flour	$\frac{1}{2}$ tsp. salt
4 tbsp. melted butter	

**Sweet or Sour Milk Ginger Cake***Ingredients:*

$\frac{1}{4}$ c. butter	$1\frac{3}{4}$ c. flour
$\frac{1}{2}$ c. sugar	1 tsp. ginger
$\frac{1}{2}$ c. molasses	$\frac{1}{2}$ tsp. cinnamon
1 egg	$\frac{1}{2}$ tsp. soda
$\frac{1}{2}$ c. milk — sour or sweet	

**Ginger Cup Cakes***Ingredients:*

$\frac{1}{4}$ c. butter	1 tsp. ginger
$\frac{1}{2}$ c. sugar	1 tsp. cloves
1 c. molasses	1 c. boiling water
2 eggs	$2\frac{1}{2}$ c. flour
1 tsp. cinnamon	2 tsp. soda
	$\frac{1}{2}$ tsp. salt

**Roxbury Cakes***Ingredients:*

$\frac{1}{4}$ c. butter	$1\frac{1}{2}$ c. flour
$\frac{1}{2}$ c. sugar	1 tsp. soda or
$\frac{1}{2}$ c. molasses	2 tsp. baking powder
2 eggs	1 tsp. cloves
$\frac{1}{2}$ c. milk — sour or sweet	$\frac{1}{4}$ tsp. nutmeg
$\frac{1}{2}$ c. nuts	$\frac{1}{2}$ c. raisins or dates

**CAKES WITHOUT BUTTER***General Rules for Mixing.*

Sift flour and sugar several times before measuring each. Beat yolks until lemon-colored, add sugar gradually and flavoring. Partly fold in stiffly beaten whites. Fold in the flour sifted with the salt. The folding should be carefully done so that the mixture will not become stiff.

*General Rules for Baking.*

Use a tube cake pan — unbuttered. Slow oven — 40–60 minutes. Oven door should not be opened during first 20 minutes. After baking, invert pan on cake cooler and do not remove cake until cold.

**Sponge Cakes****Yellow Sponge Cake***Ingredients:*

yolks of 6 eggs	grated rind $\frac{1}{2}$ lemon
1 c. sugar	whites of 6 eggs
1 tbsp. lemon juice	1 c. flour
	$\frac{1}{4}$ tsp. salt



**Boiled Sponge Cake***Ingredients:*

1 c. sugar	$\frac{1}{2}$ c. water
1 c. flour	6 eggs

Boil sugar and water to thread stage. Add to 6 whites beaten stiff, and beat until cold. Fold in flour sifted with 1 tsp. salt and a few grains of cream of tartar. Fold in the well-beaten yolks.

**Sponge Drops***Ingredients:*

3 whites eggs	$\frac{1}{3}$ c. flour
2 yolks eggs	$\frac{1}{2}$ tsp. salt
$\frac{1}{3}$ c. powdered sugar	$\frac{1}{4}$ tsp. vanilla

Drop from teaspoon on buttered sheets.

**Sponge Cakes with Baking Powder**

When eggs are expensive, the number may be decreased, and baking powder used to help raise the mixture.

**Hot Water Sponge Cake***Ingredients:*

yolks of 3 eggs	2 tsp. baking powder
1 c. sugar	whites 3 eggs
1 c. flour	grated rind $\frac{1}{2}$ orange
juice of orange and enough hot water to make $\frac{1}{2}$ cup	

**Sponge Cake***Ingredients:*

3 eggs	1 tsp. baking powder
1 c. sugar	$\frac{1}{4}$ c. cold water
1 c. flour	1 tsp. vanilla
	$\frac{1}{4}$ tsp. salt

**Jelly Roll***Ingredients:*

1 c. sugar	1 c. flour
5 eggs	1 tsp. baking powder
1 tsp. vanilla	1 tsp. salt

Line oblong pan with greased paper. When baked, remove paper, spread with jelly and roll.

**White Sponge Cake***Ingredients:*

whites of 8 eggs	1 tsp. vanilla
1 tsp. cream tartar	$\frac{1}{4}$ tsp. salt
1 c. sugar, fine granulated	$\frac{3}{4}$ c. flour

**Mocha Cakes**

Bake sponge cake mixture in a shallow pan. See below.

**Sponge Cake for Mocha Cakes***Ingredients:*

yolks 2 eggs	grated rind $\frac{1}{2}$ lemon
$\frac{1}{3}$ c. sugar	whites 2 eggs
$\frac{1}{3}$ tbsp. lemon juice	$\frac{1}{3}$ c. flour
	salt

*Method:*

Beat yolks until creamy; add sugar, beat well, lemon juice. Fold in stiffly beaten whites; when partially folded in, fold in flour. Bake in unbuttered pan in a slow oven.

Cut cake in small circles, — put together in 3 layers with thin coating of frosting; cover sides with frosting and roll in fresh coconut or chopped nuts. Ornament top with frosting.

**Frosting for Mocha Cakes***Ingredients:*

$\frac{1}{3}$ c. butter	1 c. powdered sugar
-------------------------	---------------------

*Method:*

Cream the butter and add the sugar. Add 1 c. cream filling (cooled). Add  $\frac{1}{2}$  tsp. vanilla,  $1\frac{1}{2}$  oz. melted chocolate.

## Genoese Cakes

Bake jelly roll mixture in a shallow pan. Have mixture when baked about  $\frac{3}{4}$  inch thick. Cut the cake into fancy shapes, dip each in glaze, allow this to cool and then redip the cakes in soft fondant, colored and flavored. These may be decorated with the following:

cherries	citron
nuts	angelica
candied violet leaves	candied rose leaves

## Glaze

*Ingredients:* $\frac{1}{2}$  c. sugar $\frac{1}{2}$  c. water*Method:*

Put the sugar and water in a saucepan and stir the mixture until the sugar is dissolved. Allow the sirup to cook until a hard ball forms in cold water; when the sirup has cooled slightly, use it to glaze Genoese cakes.

## SCORE CARDS

## Loaf Cake

<i>General appearance</i>	. . . . .	25
Size	(5)	
Shape	(10)	
Color	(5)	
Surface	(5)	
<i>Flavor</i>	. . . . .	50
Taste	(25)	
Odor	(25)	
<i>Texture and interior appearance</i>	. . . . .	25
Lightness	(5)	
Tenderness	(5)	
Elasticity	(5)	
Grain	(5)	
Color	(5)	

**Layer Cake**

<i>General appearance</i>	. . . . .	15
Size	(5)	
Shape	(5)	
Surface	(5)	
<i>Layers</i>	. . . . .	35
Thickness	(10)	
Flavor	(15)	
Texture	(10)	
<i>Filling</i>	. . . . .	30
Consistency	(10)	
Suitability	(5)	
Flavor	(5)	
Thickness	(5)	
Color	(2)	
Surface	(3)	
<i>Combined flavor</i>	. . . . .	20
		<hr/> 100

**Sponge Cake**

<i>General appearance</i>	. . . . .	25
Color	(5)	
Surface	(10)	
Shape	(10)	
<i>Flavor</i>	. . . . .	50
Taste	(40)	
Odor	(10)	
<i>Texture and interior appearance</i>	. . . . .	25
Lightness	(5)	
Tenderness	(5)	
Elasticity	(5)	
Grain	(5)	
Color	(5)	
		<hr/> 100

## FOOD VALUES

## Hot Water Gingerbread

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST ¢	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Molasses . .	1 c.	332	7.97		230.08	953	.0375	1.14	.9	.049
Water . .	$\frac{1}{2}$ c.	114.6								
Flour . .	$2\frac{1}{4}$ c.	250.2	28.02	2.50	187.4	883	.028	.06	.44	.003
Soda . .	1 tsp.	4.3					.001			
Ginger . .	$1\frac{1}{2}$ tsp.	4					.0015			
Salt . .	$\frac{1}{2}$ tsp.	2.25								
Melted butter . .	4 tbbsp.	78	78	66.52		600	.06	.017	.023	
Total, cooked	Loaf 10×6×2 inches	674	36.77	69.12	417.48	2436	.1281	1.217	1.363	.052
100-Cal- orie Por- tion	$2\frac{1}{4}$ ×1 $\frac{1}{4}$ ×2 inches	27.63	1.51	2.9	17.12	100	.005	.051	.055	.002

## Chocolate Cake

Sugar . .	1 c.	205.5			205.5	822	.02			
Butter . .	$\frac{1}{3}$ c.	59.7	.6	50.75		459	.04	.013	.0183	
Eggs . .	2	95.6	12.91	10.04		141	.06	.064	.3384	.0026
Flour . .	$1\frac{1}{3}$ c.	148.3	16.61	1.48	111.08	523	.01	.036	.262	.002
Milk . .	$\frac{2}{3}$ c.	161.9	5.34	6.48	8.10	112	.01	.257	.339	.0003
Chocolate Soda . .	2 oz. $\frac{1}{2}$ tsp.	37.9 2.2	4.89	18.46	11.48	231	.04 .0005	.046	.324	
Total, cooked	Loaf 9×5×2 inches	624	40.25	87.21	336.16	2289	.21	.416	1.2817	.0049
100-Cal- orie Por- tion	$\frac{1}{2}$ ×1 $\frac{1}{2}$ ×3 inches	26.83	1.73	3.75	14.45	100	.01	.016	.0512	.0001

## FOOD VALUES

## Hot Water Sponge Cake

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL CALORIES	COST ¢	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Eggs . .	2	90	12.06	9.45		132	.058	.079	.264	.0013
Sugar . .	1 c.	205.5			205.5	822	.0271			
Flour . .	1 c.	112.2	12.45	1.11	83.28	392	.0117	.027	.196	.0015
Baking powder .	1½ tsp.	9					.004			
Lemon juice	2 tbsp.	28.2			2.76	11	.016	.009	.006	
Water . .	$\frac{3}{8}$ c.									
Total, cooked	12 small cakes	360.6	24.51	10.56	291.54	1357	.1168	.115	.466	.0028
100-Calorie Portion .	1	26.32	1.78	.77	21.28	100	.0685	.008	.032	.0001

## COOKED FROSTINGS

## White Mountain

*Ingredients:*

1 c. sugar	1 egg white
$\frac{1}{3}$ c. water	1 tsp. lemon juice
$\frac{1}{8}$ tsp. cream of tartar	1 tsp. vanilla

*Method:*

Boil first three ingredients to thread stage. Pour slowly on beaten white, add flavoring, and heat until thick enough to spread.

## Chocolate I

2-4 oz. chocolate melted.

Add to White Mountain Frosting before spreading on cake.

**Chocolate II**

4 oz. chocolate melted with a little milk. Cook until thickens, add 1 c. sugar. Remove from fire, add 1 tbsp. butter, 1 tsp. vanilla. Beat until smooth.

**Fudge Frosting***Ingredients:*

1 c. sugar

 $\frac{1}{3}$  c. milk

2 oz. chocolate

*Method:*

Boil to soft ball stage. Add 2 tbsp. butter and 1 tsp. vanilla. Cool. Beat until thick enough to spread.

**Maple** $\frac{1}{2}$  lb. maple sugar $\frac{1}{4}$  c. boiling water

1 egg white

Break or grate sugar. Method same as White Mountain.

**Caramel**

1 c. brown sugar

 $\frac{1}{2}$  c. granulated sugar $\frac{3}{4}$  c. cream $\frac{1}{2}$  tbsp. butter

Prepare as Fudge Frosting.

**UNCOOKED FROSTINGS****Confectioners' Frosting***Ingredients:*

2 tbsp. water, milk, fresh fruit  
juice or cream

confectioners' sugar  
flavoring

*Method:*

To the liquid add enough sifted sugar to make of right consistency to spread, then add flavoring.

**Chocolate Frosting***Ingredients:*

2 oz. chocolate	3 tbsp. hot water
1 tbsp. butter	confectioners' sugar
$\frac{1}{4}$ tsp. vanilla	

*Method:*

Melt chocolate over boiling water, add butter and hot water. Cool, and add sugar to make of right consistency to spread. Flavor with vanilla.

**Cocoa Frosting***Ingredients:*

2 tbsp. cocoa	1 tbsp. butter
boiling water to make paste	confectioners' sugar
1 tsp. vanilla	

**Coffee Frosting***Ingredients:*

2 tsp. cocoa	1 tbsp. butter
confectioners' sugar	2 tbsp. strong coffee

*Method:*

Melt butter in the hot coffee. Add cocoa and sugar until of right consistency to spread.

**Mocha Frosting***Ingredients:*

$\frac{1}{3}$ c. butter	1 tbsp. breakfast cocoa
$1\frac{1}{2}$ c. confectioners' sugar	coffee infusion

*Method:*

Cream butter, and add sugar gradually, continuing the beating; then add cocoa and coffee infusion drop by drop until of right consistency to spread.

**Orange Frosting***Ingredients:*

4 tbsp. orange juice	1 tsp. lemon juice
rind 1 orange	



*Method:*

Soak rind in the juice  $\frac{1}{2}$  hour, strain. Add 2 egg yolks, and confectioners' sugar to spread.

## CAKE FILLINGS

## Lemon

## Orange

*Ingredients:*

1 c. sugar  
 $2\frac{1}{2}$  tbsp. flour  
 rind of 2 lemons  
 $\frac{1}{4}$  c. lemon juice  
 1 egg  
 1 tsp. butter

$\frac{1}{2}$  c. sugar  
 $2\frac{1}{2}$  tbsp. flour  
 rind  $\frac{1}{2}$  orange  
 $\frac{1}{4}$  c. orange juice  
 $\frac{1}{2}$  tbsp. lemon juice  
 1 egg

1 tsp. butter

*Method:*

Mix sugar and flour, add fruit juice and rind. Cook 20 minutes in double boiler. Add egg and cook a little longer, stirring constantly. Add butter and cool.

## Cream

## Chocolate

*Ingredients:*

7 tbsp. sugar  
 $2\frac{2}{3}$  tbsp. flour  
 salt  
 1 c. milk — scalded  
 1 egg  
 $\frac{1}{2}$  tsp. vanilla

$\frac{1}{2}$  c. sugar  
 3 tbsp. flour  
 1 oz. chocolate  
 1 c. milk — scalded  
 1 egg yolk  
 1 tsp. vanilla

*Method:*

Mix dry ingredients with a little of the cold milk. Add to the scalded milk, and cook 20 minutes in double boiler. Add egg and cook a little longer. Add the vanilla. Cool.

*Chocolate.* Shave the chocolate and add 1 tbsp. hot water to it. Heat it in double boiler until smooth. Pour the cooked flour mixture over this. Then add the egg and vanilla.

**Fig***Ingredients:* $\frac{1}{2}$  lb. chopped figs $\frac{1}{3}$  c. sugar $\frac{1}{3}$  c. boiling water

1 tbsp. lemon juice

*Method:*

Mix all together, and cook in a double boiler until thick enough to spread.

**Fruit**

Add chopped fruit and nuts to White Mountain Frosting.

## CHAPTER XV

### PASTRY

#### Plain Paste I

*Ingredients :*

1 c. flour	$\frac{1}{2}$ tsp. salt
$\frac{1}{3}$ c. lard	ice water

#### Plain Paste II

$1\frac{1}{2}$ c. flour	$\frac{1}{4}$ c. lard
$\frac{1}{4}$ c. butter	$\frac{1}{2}$ tsp. salt
ice water	

Flour. — Pastry or bread flour may be used.

Shortening. — Butter, lard, crisco, oleomargarine, drippings, chicken fat, or refined oils or combinations of two or more may be used.

*General Rules for Plain Paste.*

I. Sift flour, measure and sift flour and salt. Cut in shortening with 2 knives. Add water to make a stiff dough. Chill. Roll out on floured board.

II. Wash butter in cold water to remove salt and buttermilk. Chill butter and lard. Sift flour and salt and cut in shortening. Roll lightly into an oblong piece; roll from center forward and from center backward. Fold crosswise in thirds. Turn halfway around, roll and fold a second time.

#### Puff Paste

*Ingredients :*

1 lb. bread flour	1 lb. butter
ice water	

*Method:*

The liquid may be cream, water, or egg whites. Weigh the butter, place in ice water, and wash to remove salt and buttermilk. Weigh the flour and add water to make a stiff dough, wrap in a towel and put on ice. (Placing between 2 pans of chopped ice is a convenient way of chilling.) Dredge board with flour, also the rolling pin. Roll the dough into a rectangle almost as long as the board. Place the butter in center, fold the paste one side over and press edges together. Fold in thirds—lower part over, upper part under. Press edges, pound lightly with rolling pin to a rectangle and fold in thirds—both over. Turn the mixture halfway around, pound, roll and fold. Repeat twice unless the butter shows through the flour mixture, and chill. Repeat three times, and the last time fold from ends to center and double, making 4 layers. Chill. Use this paste for tarts, patties, or crusts.

**Patties**

Cut off a piece of dough, turn halfway round, pound to 1 inch in thickness. Cut tops, pound a little thinner and cut first layers. Cut five small centers from the tops. Put together, place on sheet and chill 15 minutes.

*Baking:*

21 min. in hot oven

7 min. rise

7 min. brown

7 min. finish baking at reduced temperature

**Cheese Straws**

Roll out paste, sprinkle with grated cheese and cayenne. Fold, turn, and pound 3 times. Chill. Cut in strips.

**Banbury Tarts**

Cut paste  $3 \times 3\frac{1}{2}$  inches. Place  $\frac{1}{2}$  tsp. of Banbury Filling on one side, fold one side over and press edges. Prick top with fork.

### Banbury Filling

#### Ingredients:

1 lemon — boiled 15 minutes	1 c. sugar
1 c. raisins	1 egg

#### Method:

Remove seeds from lemon, chop raisins and lemon, and add sugar and egg.

### CLASSIFICATION OF PIES

<i>One Crust — Baked</i>	<i>One Crust — Unbaked</i>	<i>One Crust — Unbaked, Lattice top</i>
Chocolate	Custard	Cherry
Coconut	Pumpkin	Cranberry
Cream	Sour cream	Mock cherry
Lemon		
<i>Two Crusts</i>	<i>Turnover</i>	<i>Tarts</i>
Apple	Apple	Jelly
Mince	Fruit mixtures	Banbury
		Cream
		Fruit mixtures

### One Crust — Baked

Invert pie tin. Bake crust on it; turn right side up as soon as baked.

	CREAM	COCONUT	CHOCOLATE	LEMON
Sugar . . .	1 c.	1 c.	1 c.	1 c.
Flour . . .	4 tbsp.	2 tbsp.	3 tbsp.	5 tbsp.
Salt . . .	$\frac{1}{4}$ tsp.	$\frac{1}{4}$ tsp.	$\frac{1}{4}$ tsp.	$\frac{1}{4}$ tsp.
Milk . . .	2 c.	1 $\frac{1}{2}$ c.	2 c.	1 c. boiling water
Egg yolks . .	3	2	3	2
Butter . . .	1 tsp.	1 tsp.		1 tbsp.
Vanilla . . .	1 tsp.	1 tbsp.	1 tbsp.	juice and rind
		1 c. coconut	2 oz. chocolate or $\frac{1}{2}$ c. cocoa	1 lemon

### Meringue

#### Ingredients:

2 whites of eggs	4 tbsp. granulated sugar
------------------	--------------------------

*Method:*

Add sugar slowly to stiffly beaten whites and continue beating. Bake in slow oven.

**One Crust — Unbaked**

Line a very deep tin with paste, allowing  $\frac{1}{2}$  inch on edge of plate for a frill. Turn crust under and make a frill with thumb and fore-fingers.

*To prevent soggy crust:*

Brush paste with white of egg

Dredge paste with flour

**Custard***Ingredients:*

2 eggs                       $\frac{1}{8}$  tsp. salt  
3 tbsp. sugar       $1\frac{1}{2}$  c. milk  
 $\frac{1}{8}$  tsp. nutmeg

**Pumpkin***Ingredients:*

$1\frac{1}{2}$  c. pumpkin      1 tsp. ginger  
1 c. brown sugar       $\frac{1}{2}$  tsp. salt  
1 tsp. cinnamon      2 eggs  
1 c. milk              2 tbsp. molasses

**Sour Cream***Ingredients:*

3 yolks of eggs                      1 c. chopped raisins  
1 c. sugar                      1 tsp. cinnamon  
1 c. sour cream                       $\frac{1}{2}$  tsp. cloves  
 $\frac{1}{4}$  tsp. salt

**One Crust — Unbaked — Lattice Top**

Line deep tin with paste; cut off close to edge. Cover top of pie with strips of paste.

**Mock Cherry***Ingredients:*

1 c. cranberries                      1 c. sugar  
 $\frac{1}{2}$  c. raisins                      2 tbsp. flour  
 $\frac{1}{4}$  c. cold water

*Method :*

Cut cranberries in halves. Wash to remove seeds. Chop with raisins and add remaining ingredients.

**Two Crusts**

Line tin with plain paste. Fill and cover with a paste, which has been pricked to allow the escape of steam. Insert a narrow strip of paste between lining and top. Moisten with cold water and press edges firmly. Trim and ornament as desired.

NOTE : A strip of cloth may be wrapped around the pie to prevent escape of juice. A cornucopia of paper inserted in the center allows the escape of juice.

**Apple Pie**

tart apples  
sugar

water

spice  
butter

**Mince Meat***Ingredients :*

2 lbs. fresh beef, stewed and put through a meat grinder  
1 lb. beef suet, finely chopped  
5 lbs. chopped apples  
2 lbs. seeded raisins  
1 lb. sultana raisins  
2 lbs. currants  
 $\frac{3}{4}$  lb. citron, finely cut  
2 tbsp. cinnamon  
1 tbsp. nutmeg  
2 tbsp. mace  
1 tbsp. cloves  
2 $\frac{1}{2}$  lbs. brown sugar  
1 tbsp. salt  
 $\frac{1}{2}$  lb. candied orange peel  
 $\frac{1}{4}$  lb. candied lemon peel  
1 qt. boiled cider  
water

*Method:*

Mix all ingredients except the raisins with water to cover and allow the mixture to cook 6 hours slowly, adding water as necessary to prevent burning. When ready to use, add the raisins. Spread in a pastry shell, dot over with small pieces of butter, and cover with upper crust.

**Green Tomato Mince Meat<sup>1</sup>***Ingredients:*

2 c. chopped green tomato	2 c. brown sugar
2 c. chopped sweet apples	$\frac{1}{2}$ c. molasses
$\frac{1}{2}$ c. cracker crumbs	$\frac{1}{2}$ c. vinegar
$\frac{1}{4}$ c. butter	1 c. raisins
1 tbsp. each:	1 c. currants
cinnamon	mace
cloves	nutmeg

*Method:*

Mix all the ingredients except the butter and allow the mixture to cook slowly until thick. Add the butter just before removing from the fire. This mixture is sufficient for three pies.

**Turnovers**

Cut paste in squares and fold over the filling as triangles or in circles as half circles.

**Tarts**

Cover back of tin cups with paste, prick, bake, remove from crust and fill. Cut 2 circles of paste. Remove center of one and put the two circles together with cold water. Bake and place a small amount of filling in each.

<sup>1</sup> Students who grow their own tomatoes will find this an excellent way to utilize tomatoes which are still green at frost.



SCORE CARDS

Two-crust Pie

<i>General appearance</i>		20
Form	(5)	
Attractiveness	(5)	
Design	(5)	
Workmanship	(5)	
<i>Pastry</i>		45
<i>Upper crust</i>		
Flakiness	(5)	
Tenderness	(5)	
Surface	(5)	
Palatability	(5)	
Bake	(10)	
<i>Under crust</i>		
Color	(5)	
Bake	(5)	
Rim	(5)	
<i>Filling</i>		30
Flavor	(20)	
Consistency	(5)	
Thoroughness of cooking	(5)	
<i>Ease of serving</i>		5
		<u>100</u>

One-crust Pie

<i>General appearance</i>		20
Color	(10)	
Shape	(10)	
<i>Pastry</i>		35
Color	(5)	
Tenderness	(5)	
Surface	(5)	
Palatability	(10)	
Bake	(10)	
<i>Filling</i>		40
Consistency	(5)	
Flavor	(30)	
Smoothness	(5)	
<i>Ease of serving</i>		5
		<u>100</u>

## One-crust Pie and Meringue

<i>General appearance</i> . . . . .		20
Workmanship	(10)	
Attractiveness	(10)	
<i>Pastry</i> . . . . .		30
Color	(5)	
Flakiness	(5)	
Tenderness	(5)	
Surface	(5)	
Palatability	(5)	
Condition	(5)	
<i>Filling</i> . . . . .		30
Consistency	(5)	
Smoothness	(5)	
Flavor	(20)	
<i>Meringue</i> . . . . .		15
Color	(3)	
Surface	(3)	
Lightness	(3)	
Tenderness	(3)	
Bake	(3)	
<i>Ease of serving</i> . . . . .		5
		<hr/> 100

## CHAPTER XVI

### FLOUR MIXTURES USING SOUR MILK, BUTTERMILK, SOUR CREAM

#### Brown Bread

##### *Ingredients:*

2 c. graham flour	1 c. sour milk or butter-
1 c. corn meal	milk
1 c. sweet milk	$\frac{1}{2}$ c. molasses
1 tsp. soda	1 tsp. salt

##### *Method:*

Mix the graham flour well with the corn meal, sifting the soda and salt with the corn meal. Add the liquid ingredients and stir thoroughly. Bake in a well-greased covered pan or mold in a moderate oven two hours.

#### Indian Bread

##### *Ingredients:*

2 c. corn meal	2 c. sour milk
$1\frac{1}{2}$ c. flour	1 c. molasses
2 tsp. soda	1 tsp. salt

##### *Method:*

Sift soda, salt, and flour. Add the corn meal, mix well and add the liquid ingredients. Turn into a buttered mold and steam 3 hours.

#### Steamed Graham Bread

##### *Ingredients:*

1 egg	1 c. sour milk
1 c. graham flour	$\frac{1}{2}$ c. molasses
1 c. wheat flour	1 tsp. soda
$\frac{1}{2}$ tsp. salt	

*Method:*

Sift the soda, salt, and wheat flour. Mix well with the graham flour, add the liquid ingredients and lastly the egg, slightly beaten. Turn into a well-greased mold and steam two hours.

**Corn Meal Gems***Ingredients:*

1 c. sweet milk	$\frac{1}{2}$ c. molasses
3 tbsp. sour cream	1 tsp. soda
1 c. corn meal	1 c. wheat flour
$\frac{1}{2}$ tsp. salt	

*Method:*

Mix and sift the dry ingredients. Add the liquids and mix thoroughly. Turn into greased muffin tins, and bake in a moderate oven 12 minutes.

**Graham Pudding***Ingredients:*

1 c. buttermilk or sour milk	1 c. molasses
2 c. graham flour	1 c. raisins
1 tsp. cinnamon	1 tsp. soda
	$\frac{1}{2}$ tsp. salt

*Method:*

Mix the cinnamon, salt, and soda well with the graham flour. Add the liquid ingredients and the raisins. Mix thoroughly and turn into a buttered mold and allow it to steam three hours, or turn into individual molds and steam 45 minutes.

**Plum Pudding***Ingredients:*

3 c. chopped suet	1 c. sour milk
1 c. molasses	2 eggs
1 c. sugar	1 tsp. nutmeg
1 lb. raisins	1 tbsp. cinnamon
1 lb. currants	$\frac{1}{2}$ tsp. ginger
$\frac{1}{4}$ lb. citron	1 tsp. cloves
1 tsp. soda	$\frac{1}{2}$ tsp. mace
1 c. bread crumbs	

*Method :*

Wash and prepare the currants and raisins. Put through the meat grinder with the citron. Mix the finely chopped suet with the bread crumbs and thoroughly mix the spices, salt, and soda all through. Add this to the first mixture, add the molasses and sour milk and lastly the eggs slightly beaten. Turn into buttered molds and steam five hours.

**Dried Apple Cake***Ingredients :*

1 c. dried apples (soaked over-night)	1 egg
1 c. molasses	3½ c. flour
½ c. butter	1 tsp. soda
1 c. buttermilk	1 c. sugar
1 tsp. cinnamon	1 tsp. cloves
	1 tsp. nutmeg

*Method :*

Cook the molasses and dried apples until thick. Allow the mixture to cool. Cream the butter, add the sugar and egg slightly beaten. Mix and sift the dry ingredients. Add the milk and dry ingredients alternately to the egg mixture. Lastly add the molasses and apple. Mix thoroughly. Turn into a prepared pan and bake 30 minutes in a moderate oven.

**Fruit Cake without Eggs***Ingredients :*

1 c. sugar	1 c. sour milk
4 tbsp. butter	1 c. raisins
2 c. flour	1 tsp. soda
½ tsp. salt	1 tsp. cinnamon
	½ tsp. cloves

*Method :*

Cream the butter, add the sugar and stir until the mixture is light-colored. Mix and sift the dry ingredients and add alternately to the first mixture. Add the raisins and bake in a moderate oven 30 minutes.

**Spice Cake I***Ingredients :*

$\frac{1}{2}$ c. butter	$\frac{1}{2}$ c. sour milk
$\frac{1}{2}$ c. sugar	2 c. flour
$\frac{1}{2}$ c. molasses	1 tsp. soda
1 egg	$\frac{1}{2}$ tsp. cloves
$\frac{1}{2}$ c. raisins	$\frac{1}{2}$ tsp. cinnamon

*Method :*

Follow general directions for cake mixtures. Bake in very moderate oven 45 minutes.

**Spice Cake II***Ingredients :*

$\frac{2}{3}$ c. butter	1 c. buttermilk
2 c. brown sugar	2 tsp. soda
3 eggs	2 c. flour
1 tsp. cinnamon	1 tsp. cloves
1 tsp. allspice	1 tsp. nutmeg

*Method :*

Follow general directions for cake mixture. Bake as a loaf cake 40 minutes, or as a layer cake 30 minutes.

**Sugar Cookies***Ingredients :*

2 c. sugar	1 c. sour cream
2 eggs	2 tsp. soda
1 c. butter	1 tsp. cream of tartar

*Method :*

flour to make a stiff dough

Follow general directions for cooky mixtures.

**Molasses Cookies I***Ingredients :*

1 egg	1 c. shortening
1 c. sugar	1 c. buttermilk
2 c. molasses	1 tsp. soda
1 tsp. ginger	1 tsp. cinnamon

*Method :*

flour to make a stiff dough

Follow general directions for cooky mixtures.

### Molasses Cookies II

*Ingredients :*

1 c. brown sugar	1 c. buttermilk
1 c. molasses	1 c. lard
1 tsp. salt	1 tsp. ginger
1½ tsp. soda	flour to make a soft dough

### Soft Gingerbread

*Ingredients :*

½ c. sugar	1 c. buttermilk
1 c. molasses	1 tsp. ginger
¼ c. butter	1 tsp. cloves
2 tsp. soda	2½ c. flour
2 eggs	1 tsp. cinnamon

*Method :*

Follow general rules for combining cake mixtures. Bake in a shallow pan 30 minutes in a moderate oven.

### Fried Cakes

*Ingredients :*

1 c. sugar	½ c. sour cream
2 eggs	½ c. buttermilk
1 tsp. soda	2 tsp. baking powder
1 tsp. salt	nutmeg
	flour to make a soft dough

### Doughnuts I

*Ingredients :*

1 c. sugar	1 tbsp. butter
2 eggs	1 c. sour milk
1 tsp. soda	nutmeg
	flour to make a soft dough

### Doughnuts II

*Ingredients :*

1 c. sugar	3 tbsp. butter
1 c. thick sour milk (beaten to a froth)	1 tsp. soda
flour to make a soft dough	½ tsp. nutmeg
	½ tsp. salt

## CHAPTER XVII

### SALADS AND SANDWICHES

THE American salad is a combination of meat, fish, poultry, fruit, or vegetables served on salad greens with a dressing. The oil of the dressing usually gives a high fuel value. If made with meat, fish, or poultry, the protein content may also be high; if fruits and vegetables are used, the salad may be chiefly significant for the ash constituents which these furnish.

1. Salad greens are:

lettuce	beet tops
chicory	dandelions
romaine	spinach
endive	celery
escarole	cabbage
water cress	chives

2. Foundation salads are:

a. Meat

chicken	veal
lamb	sweetbread

b. Fish

tuna	salmon
white fish	

c. Shellfish

lobster	crab
shrimp	scallops

d. Eggs



## e. Vegetables

potatoes	carrots
beets	onions
peas	beans
asparagus	cucumbers
radishes	celery
cauliflower	

## f. Fruits

cherries	oranges
lemon	grapefruit
apples	peaches
pears	apricots
green peppers	green tomatoes
white grapes	pineapple
bananas	

## g. Miscellaneous

figs	dates
nuts	gelatin
cheese	

## 3. Salad dressings are :

French	mayonnaise
boiled	cream
mixtures	

NOTE : The above salad dressings have many variations as to color, taste, and consistency, but the foundation is one of the five given.

## 4. Variations in salad dressings :

a. French dressing <sup>1</sup> plus

horseradish	Roquefort cheese
pimento	chili sauce
chives	hard-cooked egg, minced
beets, finely chopped	green pepper
parsley	celery, finely chopped
whipped cream	pecans
hazelnuts	English walnuts

<sup>1</sup> Described in the next chapter.

fruit juice in place of vinegar	water cress
raspberry vinegar, or tarra-	pepper grass
gon, used in place of	
cider vinegar	

*b.* Mayonnaise dressing <sup>1</sup>

beaten white of egg	whipped cream
fruit juice in place of vinegar	chili sauce
green pepper, chopped	pimento minced (purée)
olives	chives
raspberry vinegar	tabasco sauce
	sardines reduced to a paste

*c.* Boiled dressings

any variations as for mayonnaise

Salads: when served:

1. Formal meal

green salad with French dressing or modification

2. Informal meal

*a.* any salad, provided the same ingredients are not repeated  
in another part of the meal

*b.* any dressing

3. Luncheon

*a.* Formal

green with French dressing

fruit with French or mayonnaise dressing or modification

chicken, if served in place of other meat in meal

*b.* Informal

any salad or dressing — provided ingredients are not re-  
peated in other courses of meal

4. Suppers

meat	} used with any dressing or combination
fish	
shellfish	
fruit	
miscellaneous	

<sup>1</sup> Described in the next chapter.

## 5. Light refreshments

meat	} used with any dressing or combination
shellfish	
fruit	
asparagus	
miscellaneous	

The attractive salad must embody the following points :

freshness	coolness
crispness	attractive color
appetizing combination	appropriateness to the meal
harmonize with the decoration and color of the china	harmonize with the rest of the meal
in which it is served	

To prepare salad greens :

- a. Wash leaves and examine carefully for parasites, sand, etc.
- b. Pile leaves lightly on a cheesecloth, fold the cloth over and keep thus arranged on ice or near the ice, or
- c. Wash the leaves and place them in a tin pail which can be tightly covered. Set the pail in the ice box. Salad greens can be carried for a picnic in a pail and arrive in good condition.
- d. If salad greens are wilted, allow them to stand in cold or ice water for some time before attempting to prepare.

Accessories served with salads :

## a. Breadstuffs

bread sticks	toast
rolls	cheese tea biscuits
cheese straws	cheese crackers
toasted crackers	saltines
educator crackers	

## b. Other accessories

cheese balls	toasted cheese
fried cheese balls	celery: curls, pieces,
radishes	hearts
olives: ripe, green, stuffed	Bar le Duc currants
	nuts: salted, unsalted

Salads may be made in the greatest variety of combinations : among the most popular are :

1. Meat

- a.* chicken, celery  
       chicken, celery, sour apple, pine nuts  
       chicken, celery, pine nuts, tiny sections lemon
- b.* veal, celery  
       veal, chicken, celery
- c.* lamb, celery
- d.* sweet bread, endive cut in sections

2. Fish

- a.* tuna, celery
- b.* salmon, celery  
       salmon, cabbage  
       salmon, cucumber, gelatin
- c.* white fish, celery

3. Shellfish

- a.* lobster, celery
- b.* crab, celery
- c.* scallops

4. Egg

- egg, green pepper
- egg, pimento
- egg, potato

5. Vegetables

- a.* potato
 

French dressing	potato, chives
boiled dressing	potato, parsley
potato, carrot	potato, egg
potato, beets	potato, cucumber, green
potato, German onions	pepper
- b.* carrot  
       grated raw, boiled, or cooked  
       carrot, peas

- c.* beets, potato
  - beets, peas
  - beets, stuffed with cabbage
- d.* onions
  - German onions, tomato
  - onions, cucumber
  - onion, dressing as sandwich
- e.* peas, carrots
  - peas, string beans
  - peas, potato each in a lettuce cup
- f.* beans
  - string beans
  - lima beans
  - baked beans
- g.* asparagus
  - pimento
  - green pepper
- h.* cucumbers, radishes
  - celery
- i.* cauliflower, tart dressing

## 6. Fruits

- a.* white cherries, pieces pineapple
  - white cherries, balls of pear, apple, or peach
- b.* orange, grapefruit
  - orange, water cress
  - orange, pineapple
    - orange, almonds
  - orange, lemon, walnuts
- c.* grapefruit, pineapple
- d.* apple, celery, nuts
  - apple, water cress
- e.* peach halves filled with mayonnaise and nuts
  - peach halves stuck with almonds covered with mayonnaise
  - pears used as peaches
- f.* fresh apricots, almonds, or pine nuts
- g.* green pepper
  - sliced or chopped
  - stuffed with :

cream cheese and mayonnaise

cream cheese and pimento

yellow cheese and mayonnaise

American cheese and green and red pepper chopped very fine

filled with :

jellied mayonnaise { 1 c. water                      juice 1 lemon  
                                  2 tsp. gelatin                1 c. mayonnaise

tarragon jelly mixed with chopped cabbage, celery, pimento

red pepper — use as green pepper

*h.* tomato

sliced

cut in halves, cover cut surface with stiff mayonnaise, over this chopped green pepper

poinsettia

cut skin and pulp in sections as petals of poinsettia

remove part of pulp and seeds and fill cavity with chopped celery and green pepper

*i.* cucumbers

tomato and cucumber slices

variations given with potato

*j.* pineapple

circles, nuts

circles cut to make sections, roll of cream cheese between each section

see white cherries, orange, grapefruit

*k.* bananas

banana, finely chopped peanuts

7. Miscellaneous

figs, dates, nuts, cream dressing

dates, stuffed with cream cheese, mayonnaise dressing

dates, almonds, mayonnaise dressing

dates, Brazil nuts, mayonnaise dressing

gelatin given

Fruits and vegetables may be cut in cubes, balls, shredded, or fancy shapes. Containers may be made of orange or lemon rind, apples,

peppers, tomatoes, peaches, pears, cabbage leaves, lettuce hearts, whole cabbage, beet shells, cucumbers, romaine leaves.

### Sandwiches

#### *General Rules.*

1. Bread should be a day old, unless it is going to be rolled. White, graham, or Boston brown may be used. Sometimes two kinds are used in the same sandwich. Slice as thin as possible, remove crusts if desired, keeping the slices in pairs, then cut the desired shape. To give variety, bread may be cut in fancy shapes, — hearts, triangles, squares, rectangles, circles, etc. The center may be removed from a white bread sandwich with a tiny cutter and the hole filled in with a piece of brown bread the size of the piece removed.

2. Cream the butter by rubbing it against the sides of a bowl with a wooden spoon.

3. Butter one side of the sandwich and put filling on the other side. Press lightly together.

4. Wrap sandwiches in paraffin paper. Large numbers may be placed in a crock and covered with a damp towel and plate.

5. Save crusts of bread. Dry and grate for fine crumbs for croquettes.

6. Meat and poultry fillings are best when the meat is chopped.

7. Serve sandwiches in a basket or on a plate covered with a doily.

#### Sandwiches

Conveyor of filling :

Bread

white

Boston brown

entire wheat

nut

graham

raisin

Gingersnaps

cheese fillings are best with gingersnaps

Crackers

Educator

Saltines

fillings

fillings

cheese

cheese

marmalade

nut

fig

date

marmalade

Toast

fillings

marmalade

fig

date

salad

Fillings for sandwiches :

Meat :

ham — chopped, seasoned

ham — chopped, sauce tartare

ham — chopped, hard-cooked eggs

ham — chopped, hard-cooked eggs, white sauce

tongue, corned beef, lamb, veal, poultry or a combination of  
any of the above

Baked beans :

Salad :

poultry, veal or lamb chopped, celery, mayonnaise, lettuce leaf  
cucumber, mayonnaise, lettuce leaf

egg, mayonnaise, lettuce

olive, cream cheese, mayonnaise, lettuce leaf

egg, olives, mayonnaise, lettuce leaf

lobster, celery, mayonnaise, lettuce leaf

shrimp, celery, mayonnaise, lettuce leaf

tuna fish, celery, mayonnaise, lettuce leaf

salmon, celery, mayonnaise, lettuce leaf

lettuce, mayonnaise

lettuce, mayonnaise, sliced tomatoes

Cheese :

American cheese — moistened with vinegar, anchovy essence, or  
sardine paste

American cheese sliced ; dill pickles sliced, highly seasoned

cream cheese — moistened with cream

cream cheese — moistened with mayonnaise

cream cheese, pimento

cream cheese, walnuts or peanuts

cream cheese, olives



cream cheese, French dressing, pecans  
 cream cheese, green and red peppers  
 cream cheese, dairy cheese grated, highly seasoned  
 cottage cheese, green peppers  
 cottage cheese, parsley finely chopped

**Nut :**

walnuts or any nuts chopped, cream  
 walnuts or any nuts chopped, mayonnaise

**Sour :**

sweet pickles, olives, red pepper, dressing  
 sour pickles, green pepper, celery, dressing  
 olives, celery, red pepper, dressing  
 cucumber, green pepper, mayonnaise  
 chives, tomato, cut fine, cucumber

**Miscellaneous :**

chopped dates, cream cheese  
 sweet chocolate; preserved ginger, chopped, moistened with  
     ginger sirup  
 chopped dates, walnuts or any other kind of nut  
 jelly, walnuts  
 preserved ginger, walnuts  
 figs, raisins, dates, nuts  
 peanuts, raisins  
 orange marmalade, nuts  
 prunes, walnuts, lemon juice

**Fig Paste**

$\frac{1}{4}$ lb. figs	} cook to a paste	$\frac{1}{3}$ c. nuts
$\frac{1}{4}$ c. water		juice $\frac{1}{2}$ lemon

**Orange Honey**

1 c. sugar	} boil to thread stage	
$\frac{1}{4}$ c. water		
$\frac{1}{4}$ c. orange juice		
add		
$\frac{1}{2}$ c. orange peel chopped		$\frac{1}{2}$ tsp. vanilla
Bring to boiling point and cool		

**Fancy Sandwiches****Rolled**

Remove crusts from very fresh loaf of sandwich bread. Remove long slice of bread, spread with butter and a mixture of celery, green and red pepper, and mayonnaise. Roll like jelly roll. Cut across in  $\frac{1}{2}$ -inch slices.

**Club**

toasted bread	lettuce
chicken	broiled bacon
tomato	mayonnaise

**Fairmont**

Spread three oblongs of bread with butter on both sides, 2 slices on one side. Put together with mixture of green and red peppers, celery, and mayonnaise. Wrap in cheesecloth and press under a weight. Slice.

**Spanish**

2 anchovies	2 pickles
1 piece parsley	2 tbsp. oil

**Pound and add:**

1 tsp. prepared mustard	2 tbsp. oil
yolks 2 hard-boiled eggs	whites 2 hard-boiled eggs

**Checkers**

Cut three thick slices each white and brown bread. Spread one white with butter and cream cheese and place brown on it. Spread this slice and place a white slice on it.

Repeat this process, starting with a brown slice.

Put each in cheesecloth under weights. Trim and cut each in  $3\frac{1}{2}$ -inch slices. Spread with butter and put together so that a white block alternates with a brown. Press again and slice thin.

## FOOD VALUES

## Vegetable Salad with Mayonnaise Dressing

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL Calories	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Peas . . .	2 tbsp.	40.	1.44	.008	3.92	22	.006	.007	.052	.0003
Beans . . .	2 tbsp.	30.5	.33	.03	1.15	6	.006	.01	.017	.0002
Cauliflower . .	1 tbsp.	23.6	.42	.118	1.1	7	.008	.038	.031	
Lettuce . . .	2 leaves	31.7	.38	.095	.91	6	.009	.015	.028	.0003
Mayonnaise . .	1 tbsp.	14.4	.51	4.41		100	.0098	.005	.031	.0003
Total . . .	6 tbsp.	140.2	3.08	4.66	7.08	141	.0392	.075	.159	.0011
100-Calorie Portion . .	4 $\frac{1}{4}$ tbsp.	98.9	2.17	3.28	4.99	100	.0276	.0052	.011	.0007

## Romaine or Lettuce Salad

Romaine . .	1 head	226.2	2.71	.68	6.56	43	.06	.111	.202	.002
Olive oil . .	5 tbsp.	55.5		55.5		500	.049	.007	.009	.0001
Vinegar . . .	2 tbsp.	29.3					.003			
Mustard . . .	1 tsp.	2.8					.003			
Pepper and salt	$\frac{1}{2}$ tsp.	2.6					.005			
Total . . .	15 leaves $\frac{1}{2}$ c. dressing	316.4	2.71	56.18	6.56	543	.12	.118	.211	.0021
100-Calorie Portion	{ 3 leaves $\frac{3}{4}$ tbsp. dressing	60.78	.5	10.38	1.21	100	.022	.020	.038	.0004

## Wholewheat Bread and Cheese Sandwich

Loaf bread (trimmed) . .	1	231.4	22.45	2.08	115.11	569	.035	.062	.426	.0017
Butter . . .	5 $\frac{1}{2}$ tbsp.	99.2	.99	84.32		763	.079	.022	.0305	
Cream cheese .	$\frac{3}{4}$ pkg.	62.3	161.36	20.99	1.5	260	.037	.78	1.04	.0003
Total . . .	24	392.9	184.8	107.39	116.61	1592	.151	.864	1.4965	.0020
100-Calorie Portion . .	1 $\frac{1}{2}$	24.36	11.46	6.66	7.32	100	.009	.0318	.0897	.0001

Notice that in the sandwich the butter furnished more than half of the total energy value (calories), in the vegetable salad the oil of the mayonnaise furnished two-thirds of the calories, and in the lettuce salad the oil used as dressing furnished over ten times as much energy as the lettuce itself.

## CHAPTER XVIII

### SALAD DRESSINGS

#### EXPERIMENTS WITH OILS

**194.** — *a.* Prepare French dressing, using recipe II given below (pp. 261-262).

*b.* Again use this recipe, substituting for the vinegar the following :

tarragon vinegar  
wine vinegar  
lemon juice  
 $\frac{1}{2}$  lemon juice,  $\frac{1}{2}$  orange juice  
grapefruit juice  
pineapple juice

*c.* Again use this recipe, substituting for the olive oil the following oils :

$\frac{1}{2}$  olive oil,  $\frac{1}{2}$  cottonseed  
cottonseed  
peanut  
corn  
melted butter

**NOTE :** The instructor may further test the above oils by using various fruit acids with each, as some fruit acids blend well with the olive oil substitutes.

**195.** — *a.* Prepare mayonnaise dressing, using the recipe below (p. 263).

*b.* Prepare other mixtures, substituting in turn the following :

$\frac{1}{4}$  cottonseed,  $\frac{3}{4}$  olive oil  
 $\frac{1}{2}$  cottonseed,  $\frac{1}{2}$  olive oil  
 $\frac{3}{4}$  cottonseed,  $\frac{1}{4}$  olive oil  
cottonseed oil (Wesson)

$\frac{1}{2}$  peanut oil,  $\frac{1}{2}$  olive oil

peanut oil

$\frac{1}{2}$  corn oil,  $\frac{1}{2}$  olive oil

$\frac{1}{4}$  corn oil,  $\frac{3}{4}$  olive oil

corn oil

**196.** — *a.* Prepare mayonnaise dressing by the usual method, substituting for the egg yolks, egg yolks which have been hard cooked. Compare with the dressing prepared from the uncooked egg yolks.

*b.* Reduce the number of egg yolks  $\frac{1}{2}$  and prepare mayonnaise by the usual recipe. Add to this a partly stiffened gelatin mixture of 1 c. water, 1 tsp. lemon juice, 2 tsp. gelatin. Beat the mixture thoroughly and place in the ice box for twenty-four hours.

**197.** — Prepare mayonnaise as in **196**, *b*, but instead of adding gelatin mixture add 1 tbsp. boiling water and beat it thoroughly. Allow this to remain in ice box twenty-four hours. Compare with that in **196**, *b*.

**Summarize the results of Expts. 194-197:**

*a.* From the standpoint of the chemical and physical properties of the substances used and their behavior under the treatment to which they were subjected.

*b.* With reference to the feasibility of making salad dressings from a wide variety of materials.

The refined cottonseed, corn (maize), peanut, and olive oils of commerce are practically identical in food value. The substitution of one of the cheaper oils for olive oil in any of the following recipes will not alter the food value of the product.

## SALAD DRESSINGS

### French Dressing I

*Ingredients :*

$\frac{1}{2}$  tsp. salt

2 tbsp. vinegar (cider)

$\frac{1}{4}$  tsp. pepper

4 tbsp. olive oil

*Method :*

Mix ingredients and stir until well blended. Some prefer the addition of a few drops of onion juice. French dressing is more easily prepared and more commonly used than any other dressing.

**French Dressing II***Ingredients :*

$\frac{1}{2}$ tsp. salt	1 tbsp. vinegar
$\frac{1}{2}$ tsp. pepper	3 tbsp. olive oil

*Method :*

Proceed as above.

**Spanish Dressing***Ingredients :*

1 tsp. salt	2 tbsp. chili sauce
$\frac{1}{4}$ tsp. paprika	1 tbsp. vinegar
1 tbsp. horseradish	3 tbsp. olive oil

*Method :*

Mix all ingredients and blend thoroughly. Serve on green salad.

**Cream Dressing***Ingredients :*

$\frac{1}{2}$ tbsp. salt	1 egg slightly beaten
$\frac{1}{2}$ tbsp. mustard	$2\frac{1}{2}$ tbsp. melted butter
$\frac{3}{4}$ tbsp. sugar	$\frac{3}{4}$ c. cream
	$\frac{1}{4}$ c. vinegar

*Method :*

Mix ingredients in order given, adding vinegar very slowly. Cook over boiling water, stirring constantly until mixture thickens, strain and cool.

**Boiled Dressing***Ingredients :*

$\frac{1}{2}$ tbsp. salt	$\frac{1}{2}$ tbsp. flour
1 tsp. mustard	yolks 2 eggs
cayenne	$1\frac{1}{2}$ tbsp. melted butter
$\frac{1}{4}$ c. vinegar	$\frac{3}{4}$ c. milk

*Method :*

Mix dry ingredients, add yolks of eggs slightly beaten, butter, milk, and vinegar very slowly. Cook over boiling water, stirring constantly until mixture thickens. Strain and cool.

**Mayonnaise Dressing***Ingredients:*

1 tsp. salt	2 tbsp. lemon juice
cayenne	2 tbsp. vinegar
yolks 2 eggs	1½ c. olive oil

*Method:*

Mix dry ingredients, add egg yolks, and when well mixed, add ½ tea-spoon vinegar. Add oil gradually, drop by drop at first, and stir constantly. As mixture thickens, thin with vinegar or lemon juice. Add oil and acid alternately until all is used, stirring or beating constantly. If oil is added too rapidly, dressing will have a curdled appearance. A smooth consistency may be restored by taking yolk of another egg and adding curdled mixture slowly to it. It is desirable to have bowl containing mixture placed in a larger bowl of crushed ice. 1 teaspoon powdered sugar may be added to the dressing if the flavor is desired.

**FOOD VALUES****Mayonnaise**

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL Calories	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Egg yolks . . .	2	45.6	7.16	16.18		165	.0165	.082	.449	.0038
Vinegar . . .	1 tbsp.	17.5	1	1	1	1	.001			
Oil . . . . .	¾ c.	135.3		135.3		1218	.1193			
Mustard . . .	¼ tsp.	2								
Salt . . . . .	¼ tsp.									
Total . . . .	1 c.	200.4	7.16	151.48		1383	.1363	.082	.449	.0038
100-Calorie Portion . . .	1 tbsp.	14.48	.512	4.41		100	.009	.005	.031	.0003

<sup>1</sup> The small amounts of food substances in the vinegar are considered negligible.

## French Dressing

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL Calories	COST \$	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Olive oil . .	6 tbsp.	68		68		612	.0588			
Vinegar . .	2 tbsp.	38	1	1	1	1	.003			
Salt . . . .										
Pepper . . .										
Paprika . .										
Total . . .	$\frac{1}{2}$ c.	106		68		612	.0618			
100-Calorie Portion . .	1 $\frac{1}{3}$ tbsp.	17.3		11		100	.0105			

## Boiled Dressing

Butter . . .	1 tsp.	5.6	.05	4.76		43	.0052	.0012	.0017	
Sugar . . .	1 tsp.	5.7			5.7	22	.0006			
Flour . . .	1 tsp.	5.5	.61	.005	4.11	19	.0003	.0013	.0004	.0001
Egg yolks . .	2	36.6	5.74	12.18		133	.0366	.0066	.35	.003
Cream . . .	1 tbsp.	18.1	.39	7.24	.54	69	.008	.04	.068	.0001
Vinegar . .	2 tbsp.				1	1	.003			
Total . . .	9 tbsp.	71.5	6.79	24.18	10.35	286	.0537	.1085	.4291	.0031
100-Calorie Portion . .	3 tbsp.	24.95	2.37	3.61	3.61	100	.0177	.037	.1501	.0010

## REFERENCES

*Oils*

Cotton Seed and its Products. United States Department of Agriculture, Farmers' Bulletin 36.

LEACH. Food Inspection and Analysis.

MOORE. Experiments with Edible Oils. Arkansas Agricultural Experiment Station, Bulletin 78 (1903).

<sup>1</sup>The small amounts of food substances in the vinegar are considered negligible.



SHERMAN. Food Products.

SHERMAN. Organic Analysis.

SIMMONS and MITCHELL. Edible Fats and Oils.

TOLMAN and MUNSON. Olive Oil and its Substitutes. United States Bureau of Chemistry, Bulletin 77 (1902).

WALKER. Coconuts and Coconut Oil. Philippine Journal of Science, Vol. 1, pages 58-117 (1906).

WILEY. Foods and their Adulterations.

## CHAPTER XIX

### DESSERTS

#### Steamed Puddings

##### *General Rules.*

Mix as cake. Do not sift graham or entire wheat flour. Molds and covers should be well greased. The length of time for steaming depends on the size of pudding; 1-6 hours. After steaming, remove cover and place in hot oven a minute to dry. Remove from tin and serve with a hard or liquid sauce.

#### Steamed Indian Pudding

##### *Ingredients:*

$\frac{1}{2}$ c. meal	$\frac{1}{2}$ c. suet
$\frac{1}{2}$ c. flour	$\frac{1}{2}$ c. molasses
1 tsp. salt	$\frac{1}{2}$ c. sour milk
1 tsp. soda	1 c. raisins

##### *Method:*

Sift dry ingredients and add to the suet mixed with molasses and milk. Add the fruit, beat well, and steam.

#### Date Pudding

##### *Ingredients:*

6 tbsp. butter	$\frac{1}{4}$ tsp. salt
1 c. molasses	$\frac{1}{4}$ tsp. clove
1 c. milk	$\frac{1}{4}$ tsp. allspice
$3\frac{1}{3}$ c. flour	$\frac{1}{4}$ tsp. nutmeg
1 tsp. soda	$\frac{1}{2}$ lb. dates — chopped

**Fig Pudding***Ingredients:*

$\frac{1}{3}$ lb. suet	$\frac{1}{2}$ c. milk
$\frac{1}{2}$ lb. figs — chopped	2 eggs
$2\frac{1}{3}$ c. bread crumbs	1 c. sugar

**Hunters' Pudding***Ingredients:*

1 c. suet	$\frac{1}{2}$ tsp. cloves
1 c. molasses	$\frac{1}{2}$ tsp. mace
1 c. milk	$\frac{1}{2}$ tsp. allspice
3 c. flour	1 tsp. cinnamon
1 tsp. soda	$1\frac{1}{2}$ c. raisins
$1\frac{1}{2}$ tsp. salt	2 tbs. flour

**Fruit Pudding (Plum)***Ingredients:*

1 lb. currants	1 tsp. salt
1 lb. raisins	1 c. flour
$\frac{1}{4}$ lb. citron	4 tsp. cinnamon
$\frac{1}{4}$ lb. orange peel	1 tsp. nutmeg
$\frac{1}{4}$ lb. lemon peel	1 tsp. allspice
1 lb. brown sugar	8 eggs
1 lb. suet	1 c. brandy
1 lb. bread crumbs	1 c. sherry
juice and rind 1 lemon	

**Snow Balls***Ingredients:*

$\frac{1}{2}$ c. butter	$2\frac{1}{4}$ c. flour
1 c. sugar	$3\frac{1}{2}$ tsp. baking powder
$\frac{1}{2}$ c. milk	whites 4 eggs

Individual molds. Serve with jam.

**Pudding Sauces****CLASSIFICATION :**

*Cold.* A butter foundation using granulated, brown, or confectioners' sugar.

*Hot.* A foundation of water or fruit juice thickened with eggs, sago, arrowroot, cornstarch, or flour.

**Flavors :**

The following may be used as flavoring :

fresh fruit	vanilla
fruit flavors	cooking brandy
spices	

**SAUCES FOR PUDDINGS****Hard Sauce***Ingredients :*

$\frac{1}{3}$ c. butter	$1\frac{1}{2}$ tsp. vanilla or
1 c. powdered sugar	$\frac{1}{4}$ tsp. nutmeg

*Method :*

Cream butter, add sugar gradually, beating until light and creamy. Add flavoring. Chill thoroughly before serving.

**Sterling Sauce***Ingredients :*

$\frac{1}{2}$ c. butter	1 tsp. vanilla or lemon
1 c. brown sugar or soft maple sugar	4 tbsp. cream

**Lemon Sauce***Ingredients :*

1 c. sugar	2 c. boiling water
2 tbsp. flour	1 lemon, juice and rind
2 tbsp. butter	

*Method :*

Mix sugar and flour, add water slowly and boil 15 minutes, stirring occasionally. When ready to serve, add butter and lemon.

**Cream Sauce***Ingredients :*

1 egg	$\frac{1}{2}$ c. thick cream
1 c. powdered sugar	$\frac{1}{2}$ c. milk
$\frac{1}{2}$ tsp. vanilla	

*Method :*

Beat white of egg until stiff; add well-beaten yolk and sugar. Dilute cream with milk and whip. Combine mixtures and flavor.

**Vanilla Sauce***Ingredients :*

2 c. boiling water	$\frac{1}{4}$ c. butter
$\frac{1}{2}$ tsp. salt	1 c. sugar
2 tbps. cornstarch	1 egg
1 tsp. vanilla	

*Method :*

Combine cornstarch and salt, mix with a little cold water, and add to the boiling water. Boil 5 minutes, stirring constantly. Cream the butter and sugar, add beaten egg and vanilla. Add to first mixture. Beat well.

**Sabayon Sauce***Ingredients :*

grated rind and juice $\frac{1}{2}$ lemon	$\frac{1}{3}$ c. sugar
$\frac{1}{4}$ c. orange juice	2 eggs

*Method :*

Mix lemon, orange juice, sugar, and yolks of eggs; stir vigorously over fire until it thickens, using a wire whisk or perforated spoon; pour on to whites of eggs beaten stiff; serve hot.

**FROZEN DESSERTS**

Frozen desserts may well be included more frequently in planning meals for the family dietary. They are refreshing, give a great opportunity for variety, and when made in the home are very economical.

The selling price of commercial ice cream must be considerably higher than the cost of the ingredients because of the perishable nature of the product and the uncertainty of the demand. Homemade ice cream is therefore usually much cheaper than commercial — with the added advantage of greater certainty as to the quality of the materials used.

Ice cream is a fairly concentrated food material, while an ice is essentially a frozen beverage and is chiefly valuable for the fruit juices it contains. Frozen mixtures are cooling and refreshing, and when made in the home are economical desserts.

## EXPERIMENTS

### 198. — Freezing mixtures :

The usual proportions of ice and salt for freezing mixtures are as follows :

- a.* 1 part ice, 1 part salt
- b.* 2 parts ice, 1 part salt
- c.* 3 parts ice, 1 part salt
- d.* 4 parts ice, 1 part salt

Make each of these mixtures and determine as in a physics laboratory experiment the minimum temperature reached by each.

199. — *a.* Prepare one recipe each of lemon ice, plain ice cream, and caramel cream.

*b.* Divide each recipe into four equal parts, A, B, C, D.

*c.* Freeze as follows ; record temperature of freezing mixtures throughout the experiment. Record temperature of frozen product.

A. frozen by 198, *a.*

B. frozen by 198, *b.*

C. frozen by 198, *c.*

D. frozen by 198, *d.*

NOTE : In each case turn the freezer evenly and quickly until mixtures are frozen, or until you are satisfied mixtures will not freeze.

*d.* Compare results. Note time of freezing, consistency of product, fineness of grain, flavor.

**200.** — Prepare one recipe of lemon ice. Divide into four parts; use the freezing mixture most successful in **199**, *c*, and freeze the ice as follows:

- a.* Let freeze without stirring
- b.* Stir occasionally
- c.* Stir constantly very fast

Compare results. What is the difference in consistency and to what due?

**201.** — Use the fourth part of the lemon ice prepared in **200**, and add to it a small amount of gelatin (see rule for lemon jelly and add corresponding amount of gelatin to liquid). Freeze ice by stirring constantly and compare the result with the ices previously made. Of what value is gelatin in a frozen mixture? Could whites of eggs be used?

NOTE: Would it be possible to use sugar in place of salt in a freezing mixture?

**202.** — Prepare 1 c. of lemon ice, put in a pint jar and freeze, using sugar instead of salt. Why does the sugar lower the temperature and cause the lemon ice to freeze?

NOTE: These experiments are very enlightening and interesting if glass containers for the frozen mixture are used. Preserving jars, cream jars, or jelly glasses serve the purpose.

**203.** — *a.* Prepare one "quantity" of ice cream. Divide into four equal parts, A, B, C, D.

*b.* Freeze and pack A in a freezer having a wooden container for the ice.

*c.* Freeze and pack B in a freezer having a galvanized iron container.

*d.* Freeze and pack C in a glass jar.

*e.* Freeze D in any freezer but pack in the fireless cooker.

Allow all to stand 4 hours. Compare as to conductivity of containers.

**Fillers in Ice Cream***a. Kinds*

1. Starchy, wheat, rice, and cornstarch.
2. Egg, used in French ice cream.

*b. Purposes*

1. Gives firmer body.
2. Better standing-up qualities.

*c. Advantages*

1. Increases keeping qualities.
2. Improves texture.

*d. Disadvantages*

1. Egg and starchy fillers have to be cooked.
2. Cannot be kept in stock form.
3. In excess gives soggy cream.
4. In excess reduces the swell.

**Binders in Ice Cream***a. Kinds*

1. Gelatin — animal origin. Dissolved in boiling water or milk and added at once.

2. Gum tragacanth — vegetable origin. Is replacing gelatin.

*b. Purpose* — to bind the mixture and improve texture.

*c. Advantages*

1. Prevents grainy texture.
2. Keeps water from forming crystals.

*d. Disadvantages*

1. Slight inferiority of gelatin may be disguised by other ingredients.

2. Allows a warmer holding temperature, which permits more rapid deterioration.

**Ice Cream Powders**

Powdered gelatin and gum tragacanth to which is added 2-3 times its weight in sugar.



### Classification of Frozen Desserts

1. *Ices*. Fruit juices, diluted and sweetened.
  - a. Sherbet. Ice containing gelatin or egg whites.
  - b. Milk sherbet. Fruit juices and milk, sweetened.
  - c. Frappé. Partly frozen ices.
  - d. Punch. Sherbet highly flavored with liquid, fruit juices, or spice.
  - e. Soufflé. Sherbet containing the whole egg.
2. *Ice Cream*
  - a. Philadelphia.<sup>1</sup> Cream, flavored and sweetened.
  - b. French.<sup>1</sup> Cream, custard, flavored and sweetened.
3. *Parfait*. Cream, sugar, and egg whites with or without fruits, nuts, or flavorings.
4. *Mousse*. Frozen whipped cream, sweetened and flavored.
5. *Pudding*. Cream, custard, fruit, and nuts highly flavored.
6. *Lacto*. Sour, skimmed, or whole milk, eggs and sugar, flavored.
7. *Junket*. Frozen junket.

### ICE CREAMS AND ICES

#### *General Rules for Freezing.*

Scald the can, cover, and dasher of freezer before using them.

Adjust the can carefully in the tub before packing.

Pack freezer up to lower edge of cover, pour in mixture, readjust and pack to completely cover the can.

For freezing, use :

3 parts finely chopped ice  
1 part rock salt

For packing after freezing, use :

4 parts ice  
1 part rock salt

<sup>1</sup> These terms are not always used in the sense here given. By some, "Philadelphia ice cream" is understood to mean one whose ingredients have been cooked before freezing.

For freezing cream, the crank should be turned slowly and steadily.

When mixture is frozen, remove ice and salt from top of can, wipe cover and top, uncover and carefully remove dasher. Cover and put a stopper in cover. Drain off all the water which has collected in the tub during freezing; repack with ice and salt (4-1), cover with something heavy and allow to stand several hours to ripen.

### Vanilla Ice Cream

#### *Ingredients:*

1 qt. cream

1 tsp. vanilla

$\frac{3}{4}$  c. sugar

#### *Method:*

Scald  $\frac{1}{2}$  the cream, add the sugar, remainder of cream and vanilla. Cool and freeze according to directions.

### Chocolate Sauce

#### *Ingredients:*

1 oz. chocolate

1 tbsp. butter

1 c. sugar

$\frac{1}{3}$  c. water

1 tsp. vanilla

#### *Method:*

Melt chocolate, add butter, sugar, water. Boil 15 minutes, cool, and add vanilla.

### Strawberry Ice Cream

#### *Ingredients:*

1 qt. berries

2 c. sugar

1 qt. cream

#### *Method:*

Mash berries, add sugar and let stand 1 hour. Rub through a colander or fine strainer. Add the cream whipped.

### Frozen Custard I

#### *Ingredients:*

2 c. milk

1 tbsp. vanilla

1 c. sugar

1 pt. cream

3 eggs

**Frozen Custard II***Ingredients:*

2 c. scalded milk	$\frac{1}{8}$ tsp. salt
1 c. sugar	1 qt. thin cream
5 eggs	2 tbsp. vanilla

*Method:*

Make a custard of first four ingredients. Strain, cool, add cream and vanilla. Freeze.

**Caramel Ice Cream I***Ingredients:*

2 c. milk	4 yolks
1 c. sugar	$\frac{1}{2}$ c. sugar, caramelized
$\frac{1}{4}$ c. flour	1 qt. cream

*Method:*

Cook first three ingredients 20 minutes in double boiler, add yolks and cook 2 minutes. Add caramel, strain, cool, and add cream.

**Caramel Ice Cream II***Ingredients:*

2 c. scalded milk	1 c. sugar
$\frac{1}{4}$ c. sugar	$\frac{1}{4}$ c. boiling water
3 eggs	1 qt. thin cream
$\frac{1}{8}$ tsp. salt	2 tsp. vanilla

*Method:*

Make a custard of first four ingredients. Strain and cool. Caramelize the 1 c. sugar and add the boiling water to it. Combine mixtures, add cream and vanilla. Freeze. When half frozen, add 1 c. chopped nuts and raisins.

**Prune Ice Cream***Ingredients:*

1 c. prunes	1 c. sugar
$1\frac{1}{2}$ c. water	4 tbsp. lemon juice
$1\frac{1}{4}$ c. cream (scalded)	$\frac{1}{8}$ tsp. salt

*Method:*

Prepare the prunes for cooking and boil them in one and one half cups water until the pulp is soft. Rub the pulp through a strainer, add the sugar, lemon juice, salt, and scalded cream.

**Lacto Ice Cream***Ingredients:*

1 qt. sour milk	1 $\frac{1}{2}$ c. sugar
$\frac{1}{3}$ c. grape juice	$\frac{1}{4}$ c. lemon juice
1 egg	

*Method:*

Beat the eggs in the grape juice until the liquid is somewhat thickened. Add this to the sour milk, to which has been added the sugar and lemon juice.

**Chocolate Ice Cream***Ingredients:*

1 c. water	2 oz. chocolate
1 c. sugar	1 qt. cream
1 tbsp. vanilla	

*Method:*

Melt chocolate over hot water, add hot water and boil 5 minutes. Add salt and cool. Add cream and vanilla.

**Coffee Ice Cream***Ingredients:*

$\frac{1}{2}$ c. coffee	$\frac{2}{3}$ c. boiling water
-------------------------	--------------------------------

*Method:*

Make boiled coffee, add to recipe of plain frozen custard. Omit vanilla.

**SHERBETS****Milk Sherbet***Ingredients:*

1 qt. milk or cream	2 c. sugar
$\frac{1}{2}$ c. lemon juice	rind 1 lemon

*Method :*

Let lemon juice and sugar stand 1 hour. Add milk.

**Orange Sherbet***Ingredients :*

1 qt. milk or cream	1 $\frac{1}{4}$ c. sugar
3 tbsp. lemon juice	1 c. orange juice

**Pineapple Sherbet***Ingredients :*

1 qt. milk or cream	1 $\frac{3}{4}$ c. sugar
5 tbsp. lemon juice	$\frac{3}{4}$ c. orange juice
1 pineapple, grated	

**Combination Sherbet***Ingredients :*

4 c. water	pulp of 2 oranges
2 c. sugar	pulp of 2 lemons
pulp of 2 bananas	

**ICES****Lemon Ice***Ingredients :*

4 c. water	2 c. sugar
$\frac{3}{4}$ c. lemon juice	

*Method :*

Make a sirup by boiling sugar and water 5 minutes, add lemon juice, cool, strain, and freeze.

**Orange Ice***Ingredients :*

4 c. water	grated rind of 2 oranges
2 c. sugar	2 c. orange juice
$\frac{1}{4}$ c. lemon juice	

**Frozen Grape Juice**

Follow recipe for orange ice, using 2 c. grape juice instead of orange.

**Frozen Apricots or Peaches***Ingredients:*

1 qt. can fruit	1½ c. sugar
water	

*Method:*

Drain fruit and cut in small pieces. To the sirup, add enough water to make 4 cups, and cook with sugar 5 minutes; strain, add fruit, cool, and freeze.

**Pineapple Ice***Ingredients:*

4 c. water	juice 2 lemons
2 c. water	juice 2 oranges
1½ pineapples, grated	

**Strawberry Ice***Ingredients:*

4 c. water	2 c. strawberry juice
1½ c. sugar	2 tbsp. lemon juice

**Raspberry Ice***Ingredients:*

4 c. water	2 c. raspberry juice
1 c. sugar	juice ½ lemon

**Currant Ice***Ingredients:*

4 c. water	2 c. currant juice
1½ c. sugar	

**Currant and Raspberry***Ingredients:*

4 c. water	⅔ c. raspberry juice
1⅓ c. sugar	1⅓ c. currant juice

**Mint Ice***Ingredients:*

4 c. water  
2 c. sugar

juice 2 lemons  
leaves of 12 stalks of mint

**Ginger Ice***Ingredients:*

4 c. water  
1 c. sugar  
 $\frac{1}{3}$  c. lemon juice

$\frac{1}{4}$  lb. Canton ginger cut in  
pieces  
 $\frac{1}{2}$  c. orange juice

**PUDDINGS****Frozen Pudding***Ingredients:*

2 c. milk  
2 eggs  
6 tbsp. flour  
1 c. sugar  
1 tsp. vanilla

$\frac{1}{4}$  tsp. salt  
1 qt. cream  
2 tbsp. rum  
4 tbsp. madeira  
1 tbsp. brandy

1 c. maraschino cherries

*Method:*

Cook flour and milk 20 minutes in a double boiler, stirring until it thickens. Pour over the eggs and sugar. Return to double boiler and cook a little longer, stirring constantly. Strain, cool, and add remaining ingredients.

**Nesselrode Pudding***Ingredients:*

1 c. sugar  
1 c. chestnuts  
1 c. boiling water  
 $\frac{1}{2}$  lb. candied fruit

1 c. almonds shelled  
1 c. cream  
1 c. canned pineapple  
yolks 3 eggs

$\frac{1}{2}$  tbsp. vanilla  
2 tbsp. sherry

*Method:*

Shell chestnuts, remove from skin, boil until soft and press through a colander. Blanch, dry, and pound almonds. Add fruit cut in

small pieces. Boil sugar and water 15 minutes, and pour over the well-beaten yolks. Cook in a double boiler until egg thickens. Cool, beating constantly. Add other ingredients. After freezing let ripen 4-5 hours.

### Sauce for Nesselrode Pudding

#### *Ingredients:*

3 egg yolks	1½ c. whipped cream
3 tbsp. powdered sugar	½ tsp. vanilla

#### *Method:*

Beat eggs until thick, add sugar and beat again. Stir in a double boiler until it thickens slightly. Pour into a bowl and beat until creamy. Add flavoring and cream; 1 tbsp. brandy or wine may be added.

### Baked Alaska

Turn 1 qt. brick Vanilla Ice Cream out on an oblong sponge cake. Cover with a meringue made of 4 whites of eggs. Brown in a very hot oven. Place the cake on a paper, on a board, before turning out the ice cream.

### Ice Cream Molds

Freeze the cream very hard. Pack solidly into the mold, cover and wrap with several thicknesses of paper. Tie with strong cord and pack.

### MOUSSES

#### Coffee Mousse

#### *Ingredients:*

1 pt. cream	1 c. black coffee
½ c. powdered sugar	¼ tsp. salt

#### *Method:*

Whip the cream, add sugar and coffee, turn mixture into a mold, pack in ice and salt, and let stand five hours.



**Chocolate Mousse**

Substitute 4 oz. melted chocolate for coffee in Coffee Mousse.

**Strawberry Mousse**

Substitute 2 c. mashed strawberries for coffee.

**Fruit Mousses**

Mix 2 c. of any fruit pulp, with powdered sugar to sweeten, with the whip from one pint cream. A small amount of lemon juice brings out the flavor of other fruits.

**Grape Juice Mousse**

Substitute 1 c. grape juice for coffee in the above direction for Coffee Mousse.

**PARFAITS****Silver Parfait***Ingredients :*

1 c. sugar

1 c. water

3 egg whites

1 pt. cream

flavoring

*Method :*

Boil sugar and water until it threads. Pour on to the beaten whites of eggs, add whip from cream, flavoring, pack in ice and salt, and let stand 4 hours.

**Golden Parfait***Ingredients :*

1 c. sugar

$\frac{1}{2}$  c. water

6 egg yolks

1 pt. cream

## SCORE CARDS

## Sherbets and Ices

<i>Texture</i> . . . . .		20
Consistency	(10)	
Smoothness	(10)	
<i>Color</i> . . . . .		5
<i>Degree of freezing</i> . . . . .		10
<i>Freedom from water crystals</i> . . . . .		5
<i>Flavors</i> . . . . .		60
Retained flavor	(15)	
Imperceptibility of binder	(35)	
Delicacy	(10)	
		<hr/> 100

## Philadelphia Ice Cream

<i>Texture</i> . . . . .		20
<i>Color</i> . . . . .		5
<i>Flavor</i> . . . . .		60
<i>Degree of freezing</i> . . . . .		<hr/> 15
		100

## Custard Ice Cream

<i>Texture</i> . . . . .		20
Consistency	(5)	
Smoothness	(10)	
Condition of solid ingredients	(5)	
<i>Color</i> . . . . .		5
<i>Flavor</i> . . . . .		60
Delicacy	(30)	
Imperceptibility of filler	(30)	
<i>Degree of freezing</i> . . . . .		<hr/> 15
		100

## FOOD VALUES

## Vanilla Ice Cream

MATERIAL	MEASURE	WEIGHT Grams	PROTEIN Grams	FAT Grams	CARBOHYDRATE Grams	TOTAL Calories	COST ¢	CALCIUM (Calc. as CaO) Grams	PHOSPHORUS (Calc. as P <sub>2</sub> O <sub>5</sub> ) Grams	IRON Grams
Cream . . .	1 c.	246.1	5.41	98.44	7.38	937	.125	.65	.93	.0009
Sugar . . .	3 tbsp.	38.4			38.4	153	.0056			
Vanilla . . .	1 $\frac{1}{8}$ tsp.	3.3					.0023			
Total, cooked 100-Calorie	1 $\frac{1}{4}$ c.	270.4	5.41	98.44	45.78	1090	.1329	.65	.93	.0009
Portion . .	2 tbsp.	24.6	.49	8.95	4.16	100	.012	.059	.084	.0001

## Milk Sherbet

Sugar . . .	6 tbsp.	78.6			78.6	314	.0112			
Milk . . .	$\frac{1}{2}$ c.	115.7	3.82	4.63	5.79	80	.025	.19	.24	.0002
Cream . . .	$\frac{1}{2}$ c.	113.7	2.5	45.48	3.41	433	.0625	.3	.43	.0004
Lemon juice .	3 tbsp.	39.9			3.91	16	.0167	.012	.009	
Total . . .	1 $\frac{1}{2}$ c.	347.9	6.32	50.11	91.71	843	.1154	.502	.679	.0006
100-Calorie Portion . .	2 tbsp.	41.26	4.89	5.94	10.88	100	.0136	.06	.081	.0001

## REFERENCES

*Ice Cream*

- ALEXANDER. Effect of Gelatin in Ice Cream. *Zeitschrift für Chemie und Industrie der Kolloide*, vol. 5, pages 101-103 (1909).
- SHERMAN. Food Products.
- WASHBURN. Principles and Practice of Ice-Cream Making. Vermont Agricultural Experiment Station, Bulletin 155.
- WILEY. Ice Cream. United States Public Health Service, Hygienic Laboratory, Bulletin 56, pages 249-312 (1909).

## CHAPTER XX

### SUGAR AND CANDY

CANE SUGAR is found in the fruits and juices of many plants but the principal source is the sugar cane and the sugar beet. Cane sugar is made, however, from the maple and palm trees. By-products of the sugar made from cane are brown sugar and molasses. Corn sirup is made from corn and is lighter in color than molasses. It cannot be made to take the hard ball stage as molasses will, hence is not suitable for pulled candies or butterscotch, but for softer creams or stirred candies it is very acceptable. Corn sirup may be used for taffy by the addition of granulated sugar. Maple sirup is made from the sap of the maple tree and is essentially an American product. Maple sugar is made from the maple sirup and is sold as commonly as the sirup. Honey is made from the sugar of flowers by bees, and that obtained from clover is considered the finest. Honey made early in the summer is sweeter than that made later, when a bitter flavor (attributed to goldenrod) is apt to be imparted.

(See Sherman's *Food Products*, pages 397-444, for description of sugar industries, sirups, and confectionery.)

The sole nutritive function of the sugars is to serve as fuel, and the amount which can wisely be eaten is limited because of its tendency to irritate the stomach either directly or through fermentation.

## EXPERIMENTS

## Sugar

Sirups — of use in frozen desserts and candy making.

Various degrees of densities of sirups are recognized with the thermometer or by testing in cold water for the soft ball, hard ball, crack, hard crack, and caramel stage.

**204.** — Boil 2 c. sugar in  $\frac{1}{2}$  c. water. Note changes in boiling point as the solution becomes more condensed. When the thermometer registers various degrees, remove sirup from burner and test in cold water for the corresponding stage.

"soft ball,"	. . . .	°F.	. . .	°C.
"hard ball,"	. . . .	°F.	. . .	°C.
"crack,"	. . . .	°F.	. . .	°C.
"hard crack,"	. . . .	°F.	. . .	°C.
"barley,"	. . . .	°F.	. . .	°C.
"caramel,"	. . . .	°F.	. . .	°C.

*a.* Note the density of each stage, together with its corresponding temperature.

*b.* Prepare a candy at each stage.

*c.* What kinds of candy is each suitable for?

*d.* In what ways could sirups prepared at the various temperatures be used?

*e.* What sirup is best for:

ice?

sherbet?

frappé?

**205.** — Repeat Expt. 204, using the following:

*a.* Powdered sugar

*b.* Confectioners' sugar

*c.* Brown sugar

*d.* Molasses

*e.* Maple sugar

*f.* What are the results? Conclusions?

**206.** — Boil 2 c. sugar in  $\frac{1}{2}$  c. water to which  $\frac{1}{2}$  tsp. cream of tartar has been added. Carry through the various stages.

Turn out part of the sirup at each stage and see if you can beat or pull it.

**207.** — *a.* Repeat Expt. **206**, using vinegar (1 tbsp.) and lemon juice (2 tbsp.). Compare results with **204** and **205**.

*b.* Of what use are cream of tartar, vinegar, or lemon juice?

**208.** — Prepare molasses candy, boiling it to the hard crack stage. Just before turning sirup out to cool, add  $\frac{1}{4}$  tsp. soda. Note result in sirup and in candy when pulled.

### Fondant

#### *Ingredients:*

2 c. granulated sugar

$\frac{1}{2}$  c. cold water

#### *Method:*

Mix the sugar and water together in a saucepan. Place saucepan over heat and stir the contents with a wooden spoon until the sugar is dissolved. Allow the sirup to boil gently without further stirring until the "soft ball" stage is reached. Turn sirup on to a greased platter and let it remain undisturbed until a thin film has formed over the surface. When this has formed, with a wooden spoon stir the sirup until it becomes white and creamy. If sufficiently stiff turn the fondant on to a marble or kneading board and make perfectly smooth. The fondant will work up better if allowed to remain in the ice box overnight, but if necessary, it can be made up at once.

#### *Precautions:*

1. Scald the saucepan before using for boiling fondant, lest any odor of previous cooking appear in the fondant.
2. Do not stir the sirup after the sugar is melted. (Why?)
3. Do not allow the sirup to boil vigorously. If the sirup boils vigorously, crystals of sugar will be deposited in thick masses on the sides of the saucepan and are likely to mix with the sirup and appear

in the final product. A damp cheesecloth on a fork used to remove the crystals as fast as formed on the sides of the saucepan will help to prevent crystals from mixing with the sirup.

4. When testing the sirup always remove the saucepan from the burner so that if the proper stage is reached it will not proceed to the "hard ball" stage and so become too crystalline.

5. Have the platter ready greased before the sirup is to be poured out.

6. Do not scrape the last of the sirup from the pan, as it will appear as a hard sugary mass in the fondant.

7. Use a minimum amount of butter with which to grease the platter.

8. Wash the hands with cold water just before kneading the fondant.

9. Cover the fondant with paraffin paper when putting it away to stand overnight.

10. If fondant is quite soft when done, do not leave it in the ice box — a cupboard is better — but if quite stiff put it in the ice box to stand overnight and it will be easier to handle.

**Fondant may be used as follows :**

*Creams*

Drops  
Walnuts  
Balls

*Filling*

Dates  
Cherries  
Chocolate peppermints

*Covering*

Small fruits  
Nuts  
Fruit sections  
    pineapple  
    orange

Eclairs  
Cake  
Hot cross buns

**To make Cream Drops**

1. Divide the fondant into as many parts as you wish to make colors.

## 2. Have ready the following :

double boiler	color
spatula	flavoring
teaspoon	sheet of paraffin paper
toothpicks	spread on a perfectly
saucepan of boiling water	flat surface

3. Place the fondant in the double boiler and allow it to heat over hot water until soft. With the toothpick take up a tiny bit of color and stir it through the softened fondant. If sufficient color has not been added, repeat, but remember that a little color on the toothpick goes a long way in the fondant.

4. Now add the flavoring, using precaution that too much is not added.

5. If the fondant is still quite thick, add a few drops of boiling water and stir the whole mixture with the spatula<sup>1</sup> only enough to mix the color, flavor, and water, as too much will make it "grainy."

6. Bring the double boiler to the side of the paraffin paper and, using the teaspoon, allow the fondant to drop from the tip of the spoon on to the paper. Hold the spoon in this one position so that the fondant will be directed into the center of the drop and the result will be a circular candy.

NOTES: 1. If the fondant piles up on the spoon, not enough hot water was added.

2. If the drops are coarse-grained or rough, the fondant has been overcooked and over-stirred. This can sometimes be remedied by complete re cooking as though using cane sugar.

3. If white spots appear in the drops on standing, the fondant was stirred in the double boiler too much. These are not absolutely undesirable, but the creams will be hard or brittle. They are not perfect cream drops.

4. The candies dropped on the paper if irregular or too thick may be remelted and redropped once, but more than that is likely to cause coarse-grained candies.

5. Do not mix the candies to be done over with first mixture in the double boiler, but wait until that is used.

<sup>1</sup> The spatula is the most convenient utensil for this purpose. The fondant clings to any utensil used, but is more easily removed without waste from the spatula than from a spoon.



**To make Walnut Creams:**

1. Divide the fondant into portions by measuring with the tea-spoon, 1 tsp. to each portion.
2. Wash and dry the walnuts, using unbroken halves.
3. Shape the fondant by rolling it lightly between the palms of the hands.
4. Place a walnut meat on one side of the ball and arrange the second in a corresponding position on the other side. Press together slightly and the fondant will form a uniform mass between the nut meats. The fondant should protrude very slightly beyond the nuts.
5. Pecans or almonds may be used in place of walnuts.

**To make Chocolate Peppermints:**

Prepare cream drops as in making Cream Drops, using peppermint flavoring but no color. To cover the creams, chocolate for the purpose is on the market, but unsweetened chocolate may be used. The latter will not have a glaze, but a little butter melted with the chocolate gives a slight glaze.

Melt the chocolate over hot water, place the cream drops in the warm chocolate, and remove when well coated by using a fork. Place on a paraffin paper to dry.

Care must be taken in removing from the chocolate and placing the creams on the paraffin, or the chocolate becomes unevenly distributed on the creams.

**Fondant used as Covering:**

1. When fondant is used as a covering for fruits, melt it in a double boiler and immerse the fruits in it. Remove to a paraffin paper to dry.
2. When fondant is used as a covering for small cakes, have slightly more liquid than for fruits. Use cake one day old so that a fork can be held in it.

Put the fork in the bottom of the cake and carefully lower it until the fondant comes well up on the sides of the cake. Lift the cake out and place, right side up, on a paraffin to dry. A little practice will probably be required before a perfect result will be obtained.

Decorate the cakes with tiny pieces of angelica, citron, candied fruit, nuts, rose leaves, violet leaves, or candy flowers.

3. To cover large cakes or hot cross buns with fondant, melt it in a double boiler and arrange it on the cake as desired, using a spoon and spatula while it is still warm. This is the easiest process of any of the ways of using fondant and requires very little skill.

## CANDY

### Chocolate Fudge

#### *Ingredients:*

2 c. sugar	2 oz. chocolate
$\frac{1}{2}$ c. milk	1 tbsp. butter
$\frac{1}{16}$ tsp. salt	1 tsp. vanilla

#### *Method:*

Melt chocolate and butter, add sugar and milk and stir until sugar dissolves. Cook without stirring until it forms a soft ball when dropped in cold water. Let stand in cold water until cool. Add vanilla and beat until it can be handled. Mold, and place in buttered pan.

### Penoche

#### *Ingredients:*

1 c. brown sugar	1 tbsp. butter
1 c. granulated sugar	1 c. nut meats
$\frac{1}{2}$ c. milk or cream	1 tsp. vanilla
$\frac{1}{16}$ tsp. salt	

#### *Method:*

Proceed as for chocolate fudge.

### Maple Fudge

#### *Ingredients:*

1 lb. maple sugar	1 c. milk
2 tbsp. butter	$\frac{1}{16}$ tsp. soda
$\frac{1}{16}$ tsp. salt	

*Method:*

Melt butter and sugar, add soda and bring to boiling point. Add milk slowly, stirring constantly; add salt. Proceed as for chocolate fudge.

*Ingredients:***Karo Cream Fudge**

3 c. sugar	$\frac{1}{2}$ c. Karo
1 c. cream	$\frac{1}{2}$ lb. figs
1 tbsp. lemon juice	

*Ingredients:***Walnut Cream Fudge**

3 c. sugar	$\frac{1}{2}$ c. Karo
1 c. cream	1 c. walnuts
1 tsp. vanilla	

*Ingredients:***Victoria Fudge**

2 c. sugar	$\frac{1}{4}$ c. butter
$\frac{3}{4}$ c. milk	1 c. coconut
$\frac{1}{4}$ c. each cherries, figs, and pineapples	

Prepare as fudge — fruit flavoring added when cold.

*Ingredients:***Claire Creams**

2 c. brown sugar	1 c. nuts
1 c. cream	1 c. candied cherries
1 lb. marshmallows	

*Method:*

Boil cream and sugar as fudge. Beat until creamy and add  $\frac{1}{2}$  c. nut meats and pour in pan. Melt marshmallows, stirring constantly, and add nuts and cherries. Pour over top of fudge.

**Fluff***Ingredients :*

2 c. sugar	white 1 egg
$\frac{1}{3}$ c. water	$\frac{1}{16}$ tsp. salt
$\frac{1}{2}$ c. nut meats or candied cherries	

*Method :*

Cook sugar and water to thread stage and pour slowly on beaten white of egg. Add nuts and beat until stiff enough to hold shape when dropped from tip of a teaspoon on paraffin paper or buttered plates.

**Turkish Nougat***Ingredients :*

3 c. sugar	2 tbsp. corn sirup
1 c. Karo or other corn sirup	whites 3 eggs
1 c. water	1 c. nut meats

*Method :*

Boil sugar, water, and 1 c. corn sirup to hard crack. Have eggs beaten stiff and fold into them 2 tbsp. sirup. Beat eggs into boiled mixture and pour on to oiled paper.

**Honey Puffs***Ingredients :*

3 c. sugar	1 c. nuts	1 c. cream
$\frac{1}{4}$ c. honey	1 c. candied pineapple	white 1 egg

*Method :*

Boil sugar and cream until it will almost spin a thread. Add  $\frac{1}{4}$  c. honey and cook to "soft ball" stage. Take from fire and add 1 beaten white of egg. Beat 1 minute and add 1 c. each chopped nuts and candied pineapple. Beat until creamy, and form into balls. Place on paraffin paper.

**Molasses Candy***Ingredients :*

3 c. brown sugar	1 tbsp. butter
$\frac{1}{2}$ c. molasses	$\frac{1}{2}$ tsp. soda
1 c. water	2 tbsp. vanilla

*Method:*

Cook all but soda and vanilla until mixture cracks when dropped into cold water. Beat in soda and vanilla and pour on a buttered plate. Draw edges in toward center until cold enough to handle; pull until light and smooth. Cut into inch pieces with sharp scissors.

**Peanut Brittle***Ingredients:*

1 c. sugar

 $\frac{1}{2}$ –1 c. peanuts  
(1 qt. unshelled)
*Method:*

Melt sugar in iron pan until a light brown sirup, remove immediately, add nuts, chopped if desired, spread on an inverted tin plate and mark into squares when cool.

**Butterscotch***Ingredients:*

1 c. sugar

1 c. Karo sirup

1–4 tbsp. butter

*Method:*

Boil without stirring until brittle when dropped in cold water. Pour into shallow buttered pan and when cool mark into squares.

**Glacé for Nuts and Fruits***Ingredients:*

2 c. sugar

 $\frac{1}{2}$  c. vinegar

1 c. water

*Method:*

Boil sugar and water to the thread stage. Add vinegar and boil until color changes. Keep over boiling water while dipping. Skin of orange sections should not be broken. Cherries and grapes on stems should be hung on wires.

**Candied Orange Peel**

Wipe 4 oranges and remove peel in quarters. Put peel in saucepan, cover with cold water, bring to boiling point and then simmer until soft. Drain and scrape off  $\frac{1}{3}$  of the white portion. Cut in

thin strips. Boil 1 c. sugar and  $\frac{1}{2}$  c. water until it spins a thread. Cook strips in the sirup 5 minutes. Drain. Roll in granulated sugar.

### Salted Almonds I

Blanch Jordan almonds by allowing them to stand in boiling water until it loosens the skins. Drain, place in a shallow pan, sprinkle with salt and small pieces of butter. Brown in a pan in broiling oven, stirring frequently. Drain on paper.

### Salted Almonds II

#### *Ingredients:*

1 pt. water

1 c. almonds

$\frac{1}{2}$  c. salt

2 tbsp. butter or olive oil

#### *Method:*

Blanch almonds as described above. Boil salt and water, add almonds and cook 8 minutes. Drain and place them in a baking pan, dot over with butter and bake until a delicate brown, stirring frequently. Drain on brown paper.

### REFERENCES

#### *Sugar*

- ABEL. Sugar and Its Value as Food. United States Agriculture Department, Farmers' Bulletin No. 535 (1913).  
 BLAKEY. The United States Sugar Beet Industry.  
 BROWNE. Handbook of Sugar Analysis.  
 DEERR. Cane Sugar Manufacture.  
 DEERR. Sugar and the Sugar Cane.  
 ELLIS. An Introduction to the History of Sugar as a Commodity.  
 GEERLING. The World's Cane Sugar Industry, Past and Present.  
 SHERMAN. Food Products.  
 SNELL. Maple Sap Products and the Canadian Standards. Reprinted from the Journal of the Society of Chemical Industry (1914).  
 THORPE. Outlines of Industrial Chemistry.  
 WILEY. Foods and their Adulteration.

## CHAPTER XXI

### RECIPES FOR FIFTY SERVINGS<sup>1</sup>

#### BEVERAGES

##### Boiled Coffee

###### *Ingredients:*

5 c. coffee

2 eggs

2 c. cold water

8 qts. boiling water

1 c. cold water

##### Reception Cocoa

###### *Ingredients:*

1½ c. cocoa

2 c. sugar

8 qts. milk

1 qt. boiling water

1 pt. water

##### Tea

###### *Ingredients:*

$\frac{3}{4}$  c. tea

10 qts. boiling water

##### Lemonade

###### *Ingredients:*

4 c. sugar

1 qt. water

8 qts. water

3 doz. lemons

<sup>1</sup> As a rule only the *Ingredients* will be given in this chapter since the same *Methods* may be followed as in the preceding chapters.

**Fruit Punch***Ingredients :*

2 lbs. sugar	1 qt. water
8 lemons	1 pt. grapejuice or tea
6 oranges	1 pt. canned pineapple
6 qts. water	juice, or other fruit
1 pt. shredded pineapple	juice
1 pt. strawberries or cherries	

**FRUITS****Apple Sauce***Ingredients :*

50 large apples	3-4 qts. water
9 c. sugar	juice 2 lemons (or 2
	grated nutmegs)

**Stewed Apricots***Ingredients :*

4 lbs. dried apricots	4 qts. cold water
4 c. sugar	

**Stewed Prunes***Ingredients :*

4 lbs. prunes	4 c. sugar
4 qts. cold water	juice 1 orange
	juice 1 lemon

**Baked Rhubarb***Ingredients :*

16 lbs. rhubarb	4 qts. sugar
-----------------	--------------

**Cranberry Jelly***Ingredients :*

4 qts. cranberries	8 c. sugar
1 qt. water	



### Cranberry Sauce

*Ingredients:*

4½ qts. berries  
6 c. sugar  
1½ qts. water

### Combination of Fruits

*Ingredients:*

1 doz. oranges  
3 lbs. grapes  
2 baskets strawberries  
1 can Hawaiian pineapple  
6 grapefruit  
6 bananas

*Sirup:*

{ 2 c. sugar  
4 c. water  
juice 1 lemon

### CEREALS

#### Cream of Wheat

*Ingredients:*

¾ lb. cream of wheat  
4½ qts. water  
5 tbsp. salt

#### Oatmeal

*Ingredients:*

1 lb. oatmeal  
4 qts. boiling water  
5 tbsp. salt

#### Boiled Rice

*Ingredients:*

5 c. rice  
7 qts. water  
¼ c. salt

#### Steamed Rice

*Ingredients:*

5 c. rice  
1¾ qts. water  
¼ c. salt

## VEGETABLES

## Creamed

Asparagus	8 bunches	4 qts. white sauce II
Cabbage	10 lbs.	3 qts. white sauce II
Carrots	12 lbs.	3 qts. white sauce II
Cauliflower	6-8	3 qts. white sauce II
Celery	8 qts. cubed	3 qts. white sauce II
Onions	1 pk.	3 qts. white sauce II
Potatoes	8 qts. cubed	4 qts. white sauce II
Turnips	12 lbs.	3 qts. white sauce II

## Mashed Potatoes

*Ingredients:*

1 pk. potatoes	1 c. butter
1 qt. milk	5 tbsp. salt

## Stuffed Baked Potatoes

*Ingredients:*

50 potatoes	1½ tbsp. salt
1½ c. hot milk	2 tsp. pepper
	1 c. butter

## Potato Croquettes

*Ingredients:*

5 lbs. potatoes	¼ tsp. cayenne
4 eggs	1½ tbsp. salt
½ c. butter	½ c. chopped parsley
juice 1 onion	⅞ c. milk

## Scalloped Potatoes

*Ingredients:*

6 qts. sliced potatoes	1½ c. butter
2 qts. hot milk	3 tbsp. salt
½ c. flour	juice 1 lemon

### Sweet Potato Croquettes

*Ingredients:*

5 lbs. sweet potatoes	$\frac{1}{4}$ c. parsley
5 eggs	$1\frac{1}{2}$ tsp. salt
$\frac{1}{2}$ c. butter	$\frac{1}{8}$ tsp. cayenne

### Glazed Sweet Potatoes

*Ingredients:*

$1\frac{1}{2}$ pks. sweet potatoes	3 c. sugar
$\frac{1}{2}$ c. butter	$1\frac{1}{2}$ c. water
salt	$\frac{1}{2}$ tsp. pepper

### Corn Pudding

*Ingredients:*

6 No. 2 cans corn	12 eggs — beaten separately
3 qts. milk	3 qts. bread crumbs
2 tbsp. salt	$\frac{3}{4}$ c. butter
5 tbsp. sugar	$\frac{1}{2}$ tsp. pepper

### Stuffed Peppers

*Ingredients:*

25 large peppers	2 qts. bread crumbs
3 qts. chopped meat	juice 1 large onion
salt	pepper

### Stewed Tomatoes

*Ingredients:*

8 qts. tomatoes	4 tbsp. salt
1 c. butter	$\frac{1}{8}$ tsp. cayenne
$\frac{1}{2}$ c. sugar	4 c. bread crumbs

### Baked Tomatoes

*Ingredients:*

50 tomatoes	$\frac{1}{2}$ c. sugar
$3\frac{1}{2}$ tbsp. salt	$\frac{1}{2}$ c. parsley
1 tsp. pepper	juice 2 onions
1 c. butter	2 qts. bread crumbs

## SOUPS

**Cream Soup — Celery***Ingredients:*

8 qts. celery, cubed	7 qts. scalded milk
6 qts. boiling water	2 c. butter
2 onions	2 $\frac{3}{4}$ c. flour
pepper, cayenne	5 tbsp. salt

**Cream Soup — Corn***Ingredients:*

8 cans corn	7 qts. scalded milk
3 qts. boiling water	2 c. butter
2 onions	1 $\frac{1}{2}$ c. flour
pepper, cayenne	5 tbsp. salt

**Cream Soup — Tomato***Ingredients:*

6 qts. canned tomatoes	6 qts. scalded milk
6 bay leaves	1 $\frac{1}{2}$ c. butter
1 tsp. peppercorns	1 $\frac{1}{2}$ c. flour
2 onions	1 tbsp. baking soda
$\frac{1}{2}$ c. sugar	salt
	pepper

**Cream Soup — Potato***Ingredients:*

8 lbs. potatoes	2 c. butter
4 onions	1 $\frac{1}{2}$ c. flour
2 qts. boiling water	6 tbsp. salt
$\frac{1}{4}$ c. chopped parsley	1 tbsp. celery salt
10 qts. scalded milk	$\frac{1}{8}$ tsp. cayenne

**Brown Stock Soup***Ingredients:*

10 lbs. beef and bone	8 qts. water
1 tsp. peppercorns	12 cloves
4 bay leaves	parsley
1 c. each carrots, onion, celery, turnip	

### Mongole Soup

*Ingredients:*

4 qts. stock	4 qts. tomatoes
2 tbsp. allspice berries	24 cloves
4 bay leaves	parsley
1 large onion	1 tsp. celery seed

### Creole

*Ingredients:*

6 qts. stock	4 qts. tomatoes
1 c. peppers	$\frac{1}{2}$ c. onion
salt	pepper
cayenne	

### Sauce with Mongole Soup

*Ingredients:*

$\frac{3}{4}$ c. butter	$\frac{3}{4}$ c. flour
1 tbsp. Worcestershire sauce	2 tbsp. vinegar

### Sauce with Creole Soup

*Ingredients:*

1 $\frac{1}{2}$ c. butter	1 $\frac{3}{4}$ c. flour
$\frac{1}{2}$ c. horseradish	2 tbsp. vinegar
1 c. macaroni rings	

### Vegetable Soup

*Ingredients:*

2 shins beef	2 c. potatoes — cooked separately
10 qts. cold water	2 qts. tomatoes
6 qts. boiling water	$\frac{1}{4}$ tsp. pepper
2 c. carrots	juice 2 onions
2 c. cabbage	4 tbsp. chopped parsley
2 celery roots	4 tbsp. salt
4 bay leaves	

**Noodle Soup***Ingredients:*

6 qts. beef stock	$\frac{1}{8}$ tsp. cayenne
$\frac{1}{2}$ lb. noodles	4 tbsps. parsley
$\frac{1}{4}$ c. rice or barley	4 tbsps. salt
6 qts. boiling water	

**Macaroni Soup***Ingredients:*

6 qts. beef stock	$\frac{3}{4}$ lb. macaroni
4 tbsps. salt	6 qts. boiling water

**Rice Soup***Ingredients:*

1 knuckle of veal	1 lb. rice
6 qts. cold water	$2\frac{1}{2}$ qts. boiling water
1 bunch of herbs	4 tbsps. salt
3 tbsps. parsley	juice 2 onions
4 qts. milk	$\frac{1}{4}$ tsp. pepper

**MEATS****Mutton Stew***Ingredients:*

10 lbs. shoulder of mutton	4 c. flour
6 qts. boiling water	4 tsp. salt
2 onions	1 tsp. pepper
3 c. turnips	$\frac{1}{2}$ c. chopped parsley
3 c. carrots	3 lbs. potatoes —
2 qts. boiling water	cooked separately
$\frac{1}{2}$ c. butter	

**Beef Stew***Ingredients:*

13 lbs. chuck	2 tbsps. salt
8 qts. boiling water	$\frac{1}{2}$ c. beef drippings
6 c. turnips	2 onions
6 c. carrots	$7\frac{1}{2}$ lbs. potatoes —
2 qts. boiling water	cooked separately
1 tsp. pepper	

### Scotch Stew

#### *Ingredients:*

8 lbs. mutton from neck	1 c. onion
8 qts. boiling water	1 c. flour
1 lb. barley	$\frac{1}{2}$ c. drippings
1 c. carrots	2 tbsp. salt
1 c. turnips	1 tsp. pepper
1 c. celery	4 tbsp. parsley

### Scalloped Meat

#### *Ingredients:*

$2\frac{1}{2}$ lbs. cooked meat ground	6 lbs. raw potatoes — cooked and mashed
juice 2 onions	$\frac{1}{2}$ c. butter
$\frac{1}{4}$ c. parsley	$\frac{3}{4}$ qt. milk
2 c. bread crumbs	1 tbsp. salt
2 tsp. salt	
$\frac{1}{2}$ tsp. pepper	

### Gravy

#### *Ingredients:*

$\frac{1}{2}$ c. drippings	1 $\frac{1}{2}$ qts. stock
1 c. flour	1 tsp. salt

### Veal Loaf

#### *Ingredients:*

12 lbs. veal	6 eggs
2 lbs. salt pork	$\frac{1}{3}$ c. melted butter
3 tbsp. salt	3 c. crumbs
1 tsp. pepper	milk to moisten

## MEAT SUBSTITUTES

### Baked Beans

#### *Ingredients:*

3 qts. pea beans	1 c. molasses
2 lbs. salt pork	1 tsp. pepper
4 tbsp. salt	2 onions
1 tbsp. mustard	4 tbsp. brown sugar

## Cream Toast

*Ingredients:*

4 qts. medium white sauce                      toast

## German Toast

*Ingredients:*

2 doz. eggs	$\frac{1}{2}$ c. sugar
1 tbsp. salt	$1\frac{1}{2}$ qts. milk
toast	

## Stuffed Eggs

*Ingredients:*

50 hard-cooked eggs	3 tbsp. oil
1½ c. minced ham	⅛ tsp. cayenne
½ c. butter	1½ tsp. mustard
2½ tsp. salt	

## Macaroni and Cheese

*Ingredients :*

2 lbs. macaroni	2 qts. medium white
$\frac{1}{3}$ c. salt	sauce
cayenne	1 lb. grated cheese

## Rice with Tomato Sauce

*Ingredients:*

6 c. rice                      boiling, salted water

## Tomato Sauce for Rice or Macaroni

*Ingredients:*

1 No. 10 can tomatoes	2 c. flour
$\frac{1}{2}$ c. sugar	2 qts. soup stock or
1 tbsp. salt	water
3 bay leaves	1 tsp. peppercorns
2 c. fat	$\frac{1}{2}$ tsp. cloves



**Creamed Rice**

*Ingredients :*

1 qt. rice	1 qt. milk
$\frac{1}{4}$ c. salt	3 tbsp. sugar
7 qts. water	$\frac{1}{2}$ doz. eggs

**Rice Croquettes**

*Ingredients :*

1 qt. rice	$\frac{1}{2}$ c. butter
3 tbsp. salt	6 eggs
1 c. milk	cayenne
	parsley

**FISH**

**Creamed Codfish**

*Ingredients :*

3 lbs. codfish	4 qts. medium white sauce
	4 qts. cold water

**Scalloped Fish**

*Ingredients :*

4 qts. cold flaked fish	3 qts. medium white sauce
1 qt. buttered crumbs	1 onion and 6 bay leaves
	scalded in the milk

**Salmon Cutlets**

*Ingredients :*

5 cans salmon	5 tsp. salt
$\frac{3}{4}$ c. butter	$\frac{1}{8}$ tsp. cayenne
1 c. flour	5 tbsp. parsley
5 c. milk	juice 2 lemons

**For dipping**

6 eggs	6 tbsp. water
	sifted crumbs

**Baked Shad with Tomato Sauce***Ingredients:*

10 shad	2 tsp. salt
$\frac{3}{4}$ lb. salt pork	$1\frac{1}{2}$ tsp. pepper
$\frac{1}{2}$ lb. butter	1 c. flour

**Sauce***Ingredients:*

4 qts. tomatoes	4 tsp. salt
4 bay leaves	$\frac{1}{2}$ c. butter
1 onion	1 c. flour

**Codfish Balls***Ingredients:*

$1\frac{1}{2}$ lbs. codfish	4 eggs
6 lbs. potatoes	$\frac{1}{8}$ tsp. cayenne
$\frac{1}{2}$ c. butter	salt if needed

**Scalloped Oysters***Ingredients:*

6 qts. oysters	2 qts. buttered crumbs
$1\frac{1}{2}$ c. oyster liquor	salt
$\frac{3}{4}$ c. milk	pepper

**FLOUR MIXTURES****Bread***Ingredients:*

$2\frac{1}{2}$ qts. water	3 tbsp. salt
10 tbsp. lard or butter	$2\frac{1}{2}$ yeast cakes
$3\frac{1}{3}$ tbsp. sugar	2 c. lukewarm water
about 8 qts. flour	

**Graham Bread***Ingredients:*

6 c. scalded milk	3 yeast cakes
6 c. water	3 c. warm water
4 tbsp. salt	6 c. flour
$\frac{3}{4}$ c. butter	graham or entire wheat
$1\frac{1}{2}$ c. molasses	flour to knead

# Nut Bread

3 qts. chopped nuts added after first rising

## *Ingredients:*

## **Rolls**

1½ qts. milk	2 tbsp. salt
¾ c. butter	½ c. sugar
½ c. lard	1½ yeast cakes
7 qts. flour	3 c. lukewarm water

## *Ingredients:*

## **Steamed Brown Bread**

1 qt. rye meal	1½ tbsp. soda
1 qt. corn meal	1½ tbsp. salt
1 qt. graham flour	1 c. and 3 tbsp. molasses
1½ qts. sour milk	

## *Ingredients:*

## **Biscuits**

3 qts. flour	1 qt. milk or more
2 tbsp. salt	6 tbsp. butter
½ c. baking powder	6 tbsp. lard

## *Ingredients:*

## **Fruit Rolls**

3 qts. flour	¾ c. sugar
8 tbsp. baking powder	¾ c. butter or,
2 tbsp. salt	¾ c. lard
4-5 c. milk	

Roll out and spread with

¾ c. butter	3 c. brown sugar
3 c. raisins	2 tbsp. cinnamon

## *Ingredients:*

## **Wheat Muffins**

2½ qts. flour	5 eggs
6½ tbsp. baking powder	¾ c. sugar
1⅔ tbsp. salt	10 tbsp. melted butter
1¼ qts. milk	

### Entire Wheat or Graham Muffins

#### Ingredients:

2 pts. white flour	5 eggs
3 pts. graham flour	1 $\frac{1}{4}$ qts. milk
6 tbsp. baking powder	10 tbsp. melted butter
1 $\frac{2}{3}$ tbsp. salt	$\frac{1}{2}$ c. sugar

### Corn Muffins

#### Ingredients:

1 $\frac{1}{2}$ qts. wheat flour	1 $\frac{1}{3}$ tbsp. salt
1 $\frac{1}{2}$ qts. corn meal	6 eggs
8 tbsp. baking powder	1 $\frac{1}{2}$ qts. milk
$\frac{3}{4}$ c. sugar	$\frac{3}{4}$ c. melted butter

### CAKES

#### Ginger Cake

#### Ingredients:

1 qt. molasses	4 tsp. soda
2 c. hot water	4 tsp. ginger
1 c. melted butter	2 tsp. cinnamon
2 $\frac{1}{4}$ qts. flour	2 tsp. salt

#### Plain Cake

#### Ingredients:

2 lbs. butter	7 qts. flour
4 lbs. sugar	14 tbsp. baking powder
3 doz. eggs	2 $\frac{1}{4}$ – $\frac{1}{2}$ qts. milk
1 tbsp. salt	3 tbsp. vanilla

#### White Cake

#### Ingredients:

2 $\frac{1}{4}$ c. butter	4 $\frac{1}{2}$ tbsp. baking powder
6 $\frac{3}{4}$ c. sugar	$\frac{3}{4}$ tsp. cream of tartar
3 c. milk	1 $\frac{1}{2}$ tsp. salt
11 $\frac{1}{4}$ c. flour	2 tsp. almond extract

whites of 28 eggs

### Spanish Cake

#### *Ingredients:*

4 c. butter  
8 c. sugar  
16 eggs

14 c. flour  
8 tbsp. baking powder  
8 tsp. cinnamon

1 qt. milk

### Sponge Cake I

#### *Ingredients:*

20 eggs  
4 c. sugar  
4 c. flour

4 tsp. baking powder  
1 tsp. salt  
1 tbsp. vanilla

### Sponge Cake II

#### *Ingredients:*

24 eggs  
4 c. sugar  
rind 2 lemons

4 c. flour  
 $\frac{1}{2}$  c. lemon juice  
1 tsp. salt

### Washington Cakes

#### *Ingredients:*

1 c. butter  
3 c. sugar  
6 eggs

$5\frac{1}{4}$  c. flour  
 $2\frac{2}{3}$  tbsp. baking powder  
 $1\frac{3}{4}$  c. milk

$\frac{2}{3}$  tbsp. salt

Bake as cup cakes. Split, fill, and cover with whipped cream. The cream may be colored with currant jelly.

### Filling for Above

#### *Ingredients:*

$1\frac{1}{2}$  c. sugar  
 $\frac{1}{2}$  c. flour  
 $\frac{1}{8}$  tsp. salt

3 c. milk  
4 eggs  
 $\frac{2}{3}$  tbsp. vanilla

**Spice Cookies***Ingredients :*

1 c. butter	2 qts. flour
2 c. brown sugar	4 tsp. baking powder
2 eggs	$\frac{1}{2}$ nutmeg, grated
1 c. molasses	3 tbsp. cinnamon
1 tsp. vanilla	2 tsp. cloves
$1\frac{3}{4}$ c. milk	1 tsp. salt

**Doughnuts***Ingredients :*

$\frac{1}{2}$ c. and 2 tbsp. butter	$2\frac{1}{3}$ tbsp. baking powder
$1\frac{1}{2}$ c. sugar	$\frac{1}{2}$ tsp. cinnamon
6 eggs	$\frac{1}{2}$ tsp. nutmeg
$1\frac{1}{2}$ c. milk	1 tbsp. salt
flour to roll	1 tbsp. vanilla

**SALADS****Fruit***Ingredients :*

6 heads lettuce	1 c. English walnut meats
2 doz. oranges	2 c. cubed celery
2 cans Hawaiian pineapple	6 bananas
1 lb. malaga grapes	1 qt. mayonnaise
$\frac{1}{4}$ lb. candied cherries	

**Mayonnaise Dressing***Ingredients :*

4-6 yolks to 1 qt. oil

**Waldorf***Ingredients :*

4 qts. apples	2 c. walnut meats
2 qts. celery	1 qt. mayonnaise

**Chicken**

*Ingredients :*

5 qts. chicken (5 chickens)	1 c. French dressing
5 qts. celery	1 qt. mayonnaise

**Tomato Jelly**

*Ingredients :*

$\frac{3}{4}$ c. gelatin	1 qt. cold water
1 gal. tomatoes	1 c. celery
1 onion	2 c. carrots
$2\frac{1}{2}$ tbsp. salt	1 bay leaf
$2\frac{1}{2}$ tbsp. powdered sugar	12 peppercorns
12 allspice berries	

**Cheese Straws for Salads**

*Ingredients :*

2 qts. grated cheese	2 tsp. salt
2 qts. crumbs	1 tsp. pepper
$5\frac{1}{3}$ c. flour	$\frac{1}{8}$ tsp. cayenne
$\frac{1}{2}$ c. butter	1 c. milk

**DESSERTS**

**Snow Pudding**

*Ingredients :*

$1\frac{1}{2}$ boxes granulated gelatin	$6\frac{1}{2}$ c. sugar
2 c. cold water	2 c. lemon juice
2 qts. boiling water	10 whites of eggs

**Coffee Cream**

*Ingredients :*

2 boxes granulated gelatin	$2\frac{1}{2}$ c. cold water
4 c. sugar	2 qts. strong coffee
$3\frac{1}{2}$ qts. thin cream	

**Soft Custard***Ingredients:*

10 yolks of eggs	1 $\frac{1}{4}$ c. sugar
1 tsp. salt	2 $\frac{1}{2}$ qts. milk
2 tsp. vanilla	

**Cup Custard***Ingredients:*

4 qts. milk	2 tsp. salt
16 eggs	4 tsp. vanilla
3 c. sugar	

**Chocolate Custard***Ingredients:*

Above plus 8 oz. chocolate

**Soft Chocolate Custard***Ingredients:*

4 qts. milk	2 c. sugar
4 oz. chocolate	2 tsp. salt
16 egg yolks	4 tsp. vanilla

**Meringue**

16 egg whites	2 c. powdered sugar
---------------	---------------------

**Rice Pudding***Ingredients:*

8 qts. milk	3 c. sugar
2 qts. water	2 pkgs. raisins
3 c. rice	2 tsp. salt

**Scalloped Apples***Ingredients:*

16 qts. sliced apples	5 tsp. cinnamon
5 qts. bread crumbs	5 c. sugar
2 c. butter	juice and rind 4 lemons
1 c. water	



### Apple Snow

*Ingredients :*

30 large apples	5 c. powdered sugar
30 egg whites	juice 5 lemons

### Apple Tapioca

*Ingredients :*

3 c. tapioca	3 qts. boiling water
$\frac{3}{4}$ pk. apples	2 c. sugar

### Chocolate Bread Pudding

*Ingredients :*

5 qts. milk	12 eggs
2 $\frac{1}{2}$ qts. bread	1 tbsp. salt
10 oz. chocolate	2 tbsp. vanilla
3 c. sugar	

### Hard Sauce

*Ingredients :*

2 c. butter	2 c. powdered sugar
2 c. brown sugar	1 tbsp. vanilla

### Junket

*Ingredients :*

6 qts. milk	6 tablets dissolved in 4 tbsp.
1 $\frac{1}{2}$ c. sugar	cold water
2 tbsp. vanilla	

### Chocolate Junket

*Ingredients :*

6 qts. milk	1 c. hot water
2 c. sugar	6 tablets dissolved in 4 tbsp.
4 oz. chocolate	cold water
1 $\frac{1}{2}$ tbsp. vanilla	

**Steamed Pudding***Ingredients:*

1 c. butter	$\frac{1}{2}$ c. flour
$2\frac{1}{2}$ c. sugar	$4\frac{1}{2}$ qts. bread crumbs
5 eggs	4 tbsp. baking powder
$1\frac{1}{2}$ qts. milk	$1\frac{1}{2}$ tsp. salt
juice and rind 2 lemons	1 qt. raisins
$1\frac{1}{2}$ nutmegs (grated)	

**FROZEN DESSERTS****Chocolate Ice Cream***Ingredients:*

$2\frac{1}{2}$ qts. milk	5 c. sugar
14 eggs	12 oz. chocolate
$2\frac{1}{2}$ qts. cream	$4\frac{1}{2}$ tbsp. vanilla

**Custard Ice Cream***Ingredients:*

2 qts. milk	4 c. sugar
12 yolks	4 tbsp. vanilla
2 qts. cream	

**Strawberry Ice Cream***Ingredients:*

3 lbs. sugar	3 qts. berries
$4\frac{1}{2}$ qts. cream	

**Milk Sherbet***Ingredients:*

5 qts. milk	2 c. lemon juice
7 c. sugar	rind of 3 lemons

**Orange Ice***Ingredients:*

5 qts. water	4 lbs. sugar
rind of 6 oranges	rind of 6 lemons
1 qt. orange juice	2 c. lemon juice

## INDEX

- Absorption of odors,  
  experiments, 88-89.
- Alkaloids, 2.
- Almonds, salted, 294.
- Apples, 16-17, 52, 53, 67, 74, 100.  
  baked, 16.  
  in bloom, 16.  
  in sirup with oatmeal, 52.  
  in sirup with rice, 52.  
  potato, 67.  
  scalloped, 74, 312.  
  scalloped with cheese, 100.  
  snow, 313.  
  steamed, 16.  
  stewed, 17.  
  tapioca, 53, 313.
- Apple sauce, 16, 20, 296.
- Apricots, 19, 296.  
  conserve, 41.
- Arrowroot gruel, 56.
- Ash constituents. *See* Food Values and  
  the general discussions of the dif-  
  ferent foods.
- Asparagus, 58, 74.
  
- Bacon, 140.
- Bacteria, 26.
- Baking powder, 180.
- Bananas, baked, 17.
- Barley gruel, 56.
- Barley water, 10.
- Batters, 189-217.
- Bavarian creams, 150.  
  coffee, 150.  
  grape, 150.  
  orange, 150.
- Beans, 71, 101.  
  baked, 71, 77, 303.  
  dried lima, 71.
  
- Bean loaf, 101.
- Beef. *See also* Meat.  
  broth, 141.  
  casserole, 143.  
  cuts of, 127-128.  
  fillet, broiled, 137.  
  fillet of, 135, 136.  
  Hamburg steak, 138.  
  juice, 141.  
  pot roast, 140.  
  stew, 141.
- Beets, buttered, 64.
- Beverages, 1-10, 295-296.  
  classification, 1.  
  definition, 1.  
  experiments, 3-6.  
  fruits suitable for, 24.  
  methods of serving, 2.  
  recipes, 6-10.  
  references, 10.
- Biscuits, 196-197, 307.  
  bran, 197.  
  cheese, 197.  
  corn meal, 197.  
  emergency, 197.  
  fruit, 197.  
  general rules, 196.  
  graham or entire wheat, 196.  
  wheat, 196.
- Biuret reaction for protein, 85.
- Bouillon, 132.
- Bread, 189-193, 306-307.  
  Boston brown, 190, 307.  
  brown, 190.  
  gluten, 190.  
  graham, 190, 191, 243, 306.  
  Indian, 243.  
  nut, 190, 191, 192, 307.  
  sticks, 193.

- Bread, toast, cream, 304.  
 toast, German, 304.  
 wheat, 189, 306.
- Butter. *See also* Milk.  
 experiments, 84.
- Buttermilk. *See also* Milk.  
 experiments, 84-85.  
 uses for, 243-247.
- Butters, 23.
- Cabbage, 65-66.  
 buttered, 65.  
 creamed, 66.  
 with ham, 66.
- Caffeine, 2.
- Caffetannic acid, 3.
- Cake, 218-227, 308-309.  
 apple, dried, 245.  
 apple sauce, 222.  
 chocolate, 220.  
 coffee, 222.  
 date loaf, 221.  
 fruit, 222, 245.  
 general rules, 218.  
 gingerbread with cheese, 103, 104.  
 ginger cake, 223, 308.  
 ginger cup, 224.  
 Genoese, 227.  
 ginger, hot water, 223.  
 gold, 221.  
 jelly roll, 226.  
 Lady Baltimore, 220.  
 mocha, 226.  
 modifications, 219.  
 orange loaf, 221.  
 plain, 308.  
 pound, 220.  
 raspberry, canned, 223.  
 Roxbury, 224.  
 Spanish, 219, 309.  
 spice, 246.  
 sponge, 225, 309.  
 sponge, drops, 225.  
 sponge, for ornamenting, 226.  
 sponge, hot water, 225.  
 sponge, white, 226.  
 sponge, with baking powder, 225.  
 sponge, yellow, 224.  
 standard, 219.  
 Washington, and filling, 309.  
 white, 219, 308.
- Cake, with butter, 218-224.  
 without butter, 224-227.
- Candy, 286-294.  
 butterscotch, 293.  
 candied orange peel, 293.  
 claire creams, 291.  
 fluff, 292.  
 fondant, 286-290.  
 fudge, 290-291.  
 general discussion, 284.  
 glacé for fruits and nuts, 293.  
 honey puffs, 292.  
 molasses, 292.  
 peanut brittle, 293.  
 Turkish nougat, 292.
- Canning (and preserving), 22-46.  
 definitions, 33.  
 experiments, 26-33.  
 fruits, for, 22.  
 general directions, 34.  
 references, 45-46.  
 score cards, 45.  
 vegetables for, 22.
- Caramel, 90.
- Carrots, 59, 60, 65.
- Cereals, 47-57, 297.  
 consistency of, 48.  
 cooking of, 48, 51.  
 cream of wheat, 297.  
 experiments, 49-51.  
 general discussion, 47-48.  
 general rules, 51.  
 oatmeal, 297.  
 purchasing, 48.  
 reasons for cooking, 48.  
 references, 56-57.  
 rice, boiled, 297.  
 rice, steamed, 297.  
 serving, 48.  
 tabular summary for cooking, 51.  
 variations in serving, 48.  
 with fruits, combinations of, 52.
- Charlottes, 151.  
 caramel, 151.  
 chocolate, 151.  
 coffee, 151.  
 orange, 151.  
 Russe, 151.  
 strawberry, 151.
- Cheese, 95-105, 115, 120, 208.  
 food values, 104-105.

- Cheese, general discussion, 95-96.  
 recipes, 96-104.  
   apples scalloped with, 100.  
   balls, 103.  
   bean loaf, 101.  
   cake, 99.  
   corn, tomato and, 102.  
   croquettes, 120.  
   custard, 100.  
   eggs with, 96.  
   fondue, 97.  
   gingerbread, 103, 104.  
   Italian rice, 102.  
   lima bean loaf, 101.  
   loaf, 101.  
   macaroni baked with, 208.  
   nut loaf, 101.  
   omelet, 98.  
   red bunny, 99.  
   rice, Italian, 102.  
   soufflé, 115.  
   soufflé with pastry, 100.  
   soup, vegetable and, 101.  
   soup, 100.  
   spinach loaf, 102.  
   straws, 103, 311.  
   tomato and corn, 102.  
   Turkish pilaf, 102.  
   Welsh rarebit, 98, 99.
- Cherry and pineapple preserve, 42.
- Cherry conserve, 42.
- Chicken, 133, 154-157.  
   à la King, 157.  
   casserole, 156.  
   creamed, 156.  
   Creole, 157.  
   fricassee, 155.  
   fried, 155.  
   gravy, 155.  
   Maryland, 156.  
   pie, 156.  
   roast, 154.  
   sauce, 156.  
   soup, 133.  
   stuffing for roast, 155.
- Chili sauce, 43.
- Chocolate, 8.
- Citric acid, 2.
- Clams, 166-167.  
   broth, 167.  
   chowder, 167.
- Clams, steamed, 166.
- Cocoa, 7, 295.
- Codfish, creamed, 162.
- Coffee, 7, 295.
- Comforts, 201.
- Conserves, 23, 41-42.  
   apricot, 41.  
   cherry, 42.  
   grape, 42.  
   plum, 42.  
   rhubarb, 41.
- Consommé, 132.
- Cookies, 209-215.  
   Boston, 211.  
   Brownies, chocolate, 215.  
   chocolate, 214.  
   chocolate chips, 215.  
   chocolate wafers, 210.  
   classification, 209-210.  
   fairly gingerbread, 215.  
   general rules, 210.  
   ginger snaps, 213.  
   hermits, 214.  
   Margarets, 211.  
   meringues, 212.  
   meringues, date, 212.  
   molasses, 213, 246, 247.  
   molasses drop, 212.  
   nut, 215.  
   oatmeal, 211.  
   orange circles, 213.  
   peanut, 212.  
   sponge drops, 213.  
   sugar, 214, 246.  
   thin, 214.  
   vanilla, 214.
- Corn meal gruel, 56.
- Corn pudding, 65.
- Cornstarch pudding, 53.
- Cottage cheese, 87.
- Crabapples, baked, 17.
- Crabs, 170-171.  
   devilled, 170.  
   soft-shelled, 171.
- Cranberry,  
   jelly, 18, 296.  
   sauce, 18, 297.  
   spiced, 18.
- Cream,  
   experiments, 83-84.  
   uses for sour, 244, 246, 247.

- Creamed vegetables, 73, 298.  
 Cream filling for eclairs, 207.  
 Cream of wheat, 297.  
 Cream puffs, 206, 207.  
 Cream soups, 74-75, 300.  
   asparagus, 74.  
   celery, 75, 300.  
   chicken, 75.  
   string bean, 75.  
   tomato, 75, 300.  
 Croquettes, 118-121.  
   beef and rice, 121.  
   cheese, 120.  
   chicken, 120.  
   crumbs for, 118.  
   eggs for, 118.  
   fats for frying, 119.  
   nut and raisin, 120.  
   potato, 119.  
   recipes, 119-121.  
   rice, 119.  
   score card, 121.  
   veal or lamb, 121.  
 Crumbs for scalloped dishes, 73.  
 Cucumber pickles, 44.  
 Custard, 89-91, 100, 312.  
   baked, 90, 312.  
   caramel, 90.  
   cheese, 100.  
   chocolate, 91, 312.  
   floating island, 91.  
   general rules, 89.  
   rice or tapioca, 91.  
   soft, 89, 312.  
   steamed, 90.  
   tapioca or rice, 91.  
 Dates, oatmeal with, 52.  
 Desserts, 53-55, 311-314. *See also under*  
   the name of each.  
 Doughnuts, 201, 247, 310.  
 Doughs, 189-217.  
 Drying, fruits for, 24.  
 Eclairs, 207.  
 Eggs, 96, 107-113, 237.  
   experiments, 107-109.  
   food value, 113.  
   general discussion, 107.  
   preserving, 107, 112.  
   recipes, 109-112, 237.  
 Eggs, recipes, à la goldenrod, 112.  
   coddled, 110.  
   foamy omelet, 111.  
   French omelet, 111.  
   hard-cooked, 109.  
   in-nest, 111.  
   omelets, 110.  
   poached, 110.  
   scrambled, 110.  
   scrambled with tomato sauce, 112.  
   shirred or baked, 110.  
   soft-cooked, 109.  
   stuffed, 304.  
   with cheese, 96.  
   with grape juice, 9.  
   references, 122.  
 Egg plant, 71.  
 Escalloped. *See* Scalloped.  
 Experiments, 3-6, 13-15, 26-33, 49-51,  
   60-64, 83-89, 107-109, 116-118,  
   125-126, 147-148, 172-179, 180-  
   185, 260-261, 270-271, 285-286.  
   *See also* under the different foods.  
 Farinaceous desserts, 53-55, 312-313.  
   apple tapioca, 53, 313.  
   baked Indian, 54.  
   coffee sago, 54.  
   cornstarch pudding, 53.  
   orange, 55.  
   rice, 55, 312.  
   shredded wheat, 55.  
 Fat, experiments with deep fat frying,  
   116-118.  
   *See also* Food Values and the general  
   discussions of the individual  
   foods.  
 Fehling-Benedict solution, 13.  
 Fifty servings, recipes for,  
   beverages, 295-296.  
   breads, 306-307.  
   cakes, 308-309.  
   cereals, 297.  
   cheese straws, 311.  
   cookies, 310.  
   desserts, 311-314.  
   doughnuts, 310.  
   fish, 305-306.  
   frozen desserts, 314.  
   fruits, 296-297.  
   mayonnaise dressing, 310.

- Fifty servings, recipes for, meats, 302-303.  
 meat substitutes, 303-305.  
 muffins, 307-308.  
 oysters, scalloped, 306.  
 salads, 310-311.  
 soups, 300-302.  
 vegetables, 298-299.
- Fillings for cake, 220, 223, 233-234.  
 chocolate, 223, 233.  
 cream, 233.  
 fig and fruit, 234.  
 Lady Baltimore, 220.  
 lemon, 233.  
 orange, 233.
- Fish, 158-165, 171, 305-306.  
 baked, stuffed, 160, 306.  
 boiled, 160.  
 boning, 159.  
 broiled, 160.  
 chowder, 162.  
 cleaning, 159.  
 codfish balls, 306.  
 cooking, 159, 161.  
 creamed cod, 305.  
 food value, 165.  
 general discussion, 158-159.  
 recipes, 160-162, 305-306. *See also*  
     under name of each dish.  
 references, 171.  
 salmon cutlets, 305.  
 sauces, 159, 163-164.  
 scalloped, 162, 305.  
 steamed, 160.  
 stuffing for, 160.  
 vegetables suitable for serving with,  
     159.
- Fish balls, 161.  
 Flounder, turbans of, 161.
- Flour mixtures, 172-247, 266-267.  
 classification, 185-187.  
 experiments, 172-185.  
 food values, 198, 205, 217, 229, 230.  
 general discussion, 172.  
 oven temperatures, 187.  
 pastry, 234-242.  
 recipes, 189-195, 196-204, 206-215,  
     218-227, 235-240, 243-247, 266-  
     267.  
 references, 187-188.  
 score cards, 195, 196, 197, 205, 216,  
     227, 228, 241, 242.
- Flour mixtures, steamed, 266-267.  
     using sour milk, buttermilk, sour  
     cream, 243-247.
- Food values, 20, 77-79, 92, 104-105, 113,  
 165, 198, 205, 217, 229-230, 259,  
 263-264, 283.  
 apple sauce, 20.  
 beans, baked, 77.  
 biscuits, 198.  
 boiled dressing, 264.  
 cake, chocolate, 229.  
 cake, sponge, 230.  
 creamed codfish on toast, 165.  
 cream soups, 78-79.  
 custard, baked, 92.  
 egg, scrambled, 113.  
 French dressing, 264.  
 gingerbread, 229.  
 hermits, 217.  
 ice cream, 283.  
 macaroni and cheese, 104.  
 mayonnaise dressing, 263.  
 molasses cookies, 217.  
 muffins, 205.  
 potatoes, creamed, 78.  
 prunes, stewed, 20.  
 rice pudding with eggs, 92.  
 rice with cheese and tomatoes, 105.  
 salads, 259.  
 sandwich, 259.  
 sherbet, milk, 283.
- Fritters, 200-201.
- Frostings, 226, 227, 230-232.  
 caramel, 231.  
 chocolate, 230, 231, 232.  
 cocoa, 232.  
 coffee, 232.  
 confectioners', 231.  
 cooked, 230-231.  
 fudge, 231.  
 glaze, 227.  
 maple, 231..  
 mocha, 232.  
 mocha for sponge cake, 226.  
 orange, 232.  
 White Mountain, 230.
- Frozen mixtures, 269-283.  
 binders, 272.  
 classification, 273.  
 experiments, 270-271.  
 fillers, 272.

- Frozen mixtures, food values, 283.  
 general discussion, 269-270.  
 ice cream powders, 272.  
 recipes, 274-281.  
 references, 283.  
 score cards, 282.
- Fruits, 1, 11-21, 52, 296, 297.  
 acids of, 2.  
 apple sauce, 296.  
 apricots stewed, 296.  
 chemical composition, 11.  
 combinations of, with cereals, 52, 297.  
 cooking, reasons for, 12.  
 cranberry jelly, 296.  
 dietetic value, 11.  
 dried, general rules, 18.  
 experiments, 13-15.  
 food values, 20.  
 general classes, 11, 22-24.  
 general rules for preparation, 12.  
 preservation, 22, 25, 33. *See also*  
     Canning.  
 purchasing, 12.  
 recipes, 16-19.  
 references, 20-21.  
 rhubarb, baked, 296.  
 score cards for preserved fruits, 45.
- Gelatin, 124, 146-151.  
 as protein food, 124.  
 culture media, 28.  
 experiments, 147-148.  
 general discussion, 146-147.  
 recipes, 148-151.  
 score cards, 151.
- Gingerbread, 103, 104, 223, 247.
- Grape, conserve, 42.  
 juice, 1, 9, 38.  
 spiced, 40.
- Grapefruit marmalade, 39. *See also*  
     Fruits.
- Gravy, 136, 155.
- Griddlecakes, 198-199.  
 corn meal, 199.  
 general rules, 199.  
 sour milk, 198.  
 sweet milk, 198.  
 wheat, 198.
- Gruels, 56.
- Haddock, planked, 161.
- Hash, browned, 142.
- Honey (so called), 23.
- Ice creams, 274-276, 280.  
 baked Alaska, 280.  
 caramel, 275.  
 chocolate, 276, 314.  
 coffee, 276.  
 frozen custard, 274-275, 314.  
 lacto, 276.  
 molds, 280.  
 prune, 275.  
 strawberry, 274, 314.  
 vanilla, 274.
- Ices, 277-279.  
 apricot, 278.  
 currant, 278.  
 currant and raspberry, 278.  
 ginger, 279.  
 grape juice, 278.  
 lemon, 277.  
 mint, 279.  
 orange, 277.  
 peach, 278.  
 pineapple, 278.  
 raspberry, 278.  
 strawberry, 278.
- Iodine test for starch, 13.
- Jam, 23.
- Jellies with gelatin, 148-149.  
 coffee, 149.  
 fruit, 149.  
 lemon, 149.  
 orange, 149.  
 prune, 149.  
 wine, 149.
- Jelly making, 14, 18, 23, 32, 35-36, 39.
- Junket, 86, 313.
- Lamb. *See* Meat.
- Lamb chops, 137.
- Lead acetate solution, 3.
- Leavens — Leavening agents, 179.
- Lemonade, 1, 9, 295.
- Lemon whey, 8.
- Lobster, 169-170.  
 general directions, 169.  
 Newburg, 170.



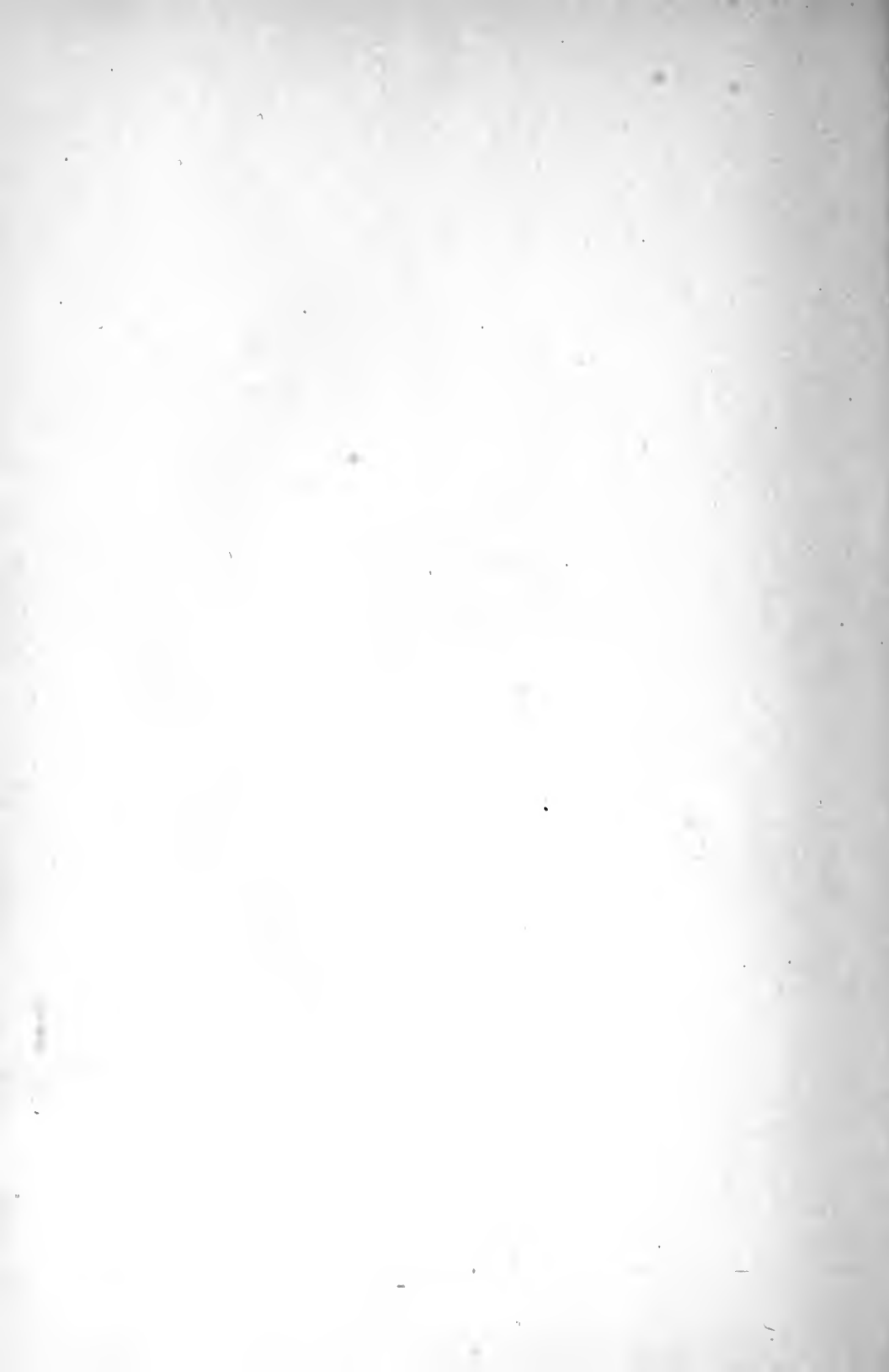
- Macaroni, 207-209, 304.  
 baked with cheese, 208, 304.  
 boiled, 207.  
 cheese and tomato sauce, 209.  
 Italian style, 208.
- Macaroons, 150.
- Malic acid, 2.
- Marmalades, 33, 39.  
 grapefruit, 39.  
 yellow tomato, 39.
- Meat, 123-152, 302, 303.  
 beef, 135-143.  
 broiling, 137.  
 cakes, 142.  
 casserole, 143.  
 cuts of beef, 127-128.  
 cuts of lamb, 130.  
 cuts of mutton, 130.  
 cuts of pork, 131.  
 cuts of veal, 129.  
 experiments, 125-126.  
 general discussion, 123-124.  
 hash, browned, 142.  
 lamb chops, 137.  
 left-over, 142-144.  
 mutton chops, broiling, 137.  
 recipes, 135-144.  
 references, 151-152.  
 roasting, 135.  
 rules for tender cuts, 135-140.  
 rules for tough cuts, 140-144.  
 sauces, 144-146.  
 score card, 146.  
 table for roasting, 135.  
 veal casserole, 143.
- Meringues, 212.
- Microorganisms, 25.
- Milk, 82-94.  
 experiments, 83-89.  
 food values, 92.  
 general discussion, 82-83.  
 recipes, 89-92.  
 references, 93-94.  
 sour, recipes using, 243-247.
- Millon test for protein, 13.
- Mineral matter. *See* Food Values and the general discussions of the different foods.
- Molds, 25-26.
- Mousses, 280-281.  
 chocolate, 281.
- Mousses, coffee, 280.  
 fruit, 281.  
 grape juice, 281.  
 strawberry, 281.
- Muffins, Berkshire, 203.  
 blueberry, 204.  
 bran, 203.  
 bran with corn, 203.  
 corn meal, 202, 244, 307.  
 entire wheat, 202.  
 for fifty servings, 307, 308.  
 general rules, 202.  
 graham, 202, 308.  
 hominy, 203.  
 one egg, 202.  
 rice, 203.  
 southern pone, 204.  
 southern spoon corn bread, 204.  
 wheat, 202, 307.
- Mutton. *See* Meat.
- Mutton chops, 137.
- Noodles, 208.
- Nutritive value of cooked foods, 19.  
*See also* Food Values.
- Oatmeal, 297.  
 apples in sirup with, 52.  
 gruel, 56.  
 water, 9.  
 with dates, 52.
- Oils, experiments, 260-261.
- Olives, 159, 256-257.
- Omelets, 110-111, 98.  
 cheese, 98.  
 foamy, 111.  
 French, 111.
- Onions, 59.
- Orangeade, 1.
- Oven temperature, 175, 187.
- Oysters, 168-169.  
 broth, 168.  
 cocktail, 168.  
 fricassee, 169.  
 fried, 168.  
 "pigs-in-blankets," 169.  
 stew, 168.
- Pan-broiling, 137, 138.
- Parfaits, 281.

- Parfaits, golden, 281.  
     silver, 281.
- Parsnips, 68.
- Pastes, flour, 207-208.  
     plain, 235.  
     puff, 235.
- Pastry, 235-240.  
     Banbury filling, 237.  
     Banbury tarts, 236.  
     cheese straws, 236.  
     meringue, 237.  
     patties, 236.  
     tarts and turnovers, 240.
- Peaches, 37.
- Pears, 17, 40.
- Peas, 65.
- Pectin, 12, 14.
- Peppers,  
     pickled, 44.  
     stuffed, 69, 299.
- Pickles, 43-44.  
     cucumber, 44.  
     mustard, 43.  
     red pepper, 44.  
     sweet, 43.  
     tomato, 44.
- Pickling, 24, 43-44.  
     fruits suitable for, 24.  
     recipes, 43-44.  
     vegetables suitable for, 24.
- Pie, 237-240.  
     apple, 239.  
     chocolate, 237.  
     coconut, 237.  
     cream, 237.  
     custard, 238.  
     green tomato mince, 240.  
     lemon, 237.  
     mince, 239.  
     mock cherry, 238.  
     pumpkin, 238.  
     sour cream, 238.
- Popovers, 206.
- Pork. *See* Meat.
- Potassium acid tartrate, 2.
- Potato, 66-68, 298.  
     apples, 67.  
     mashed, 298.  
     puff, 67.  
     soufflé, 67.  
     stuffed, baked, 66.
- Potato, sweet, glazed, 68.  
     sweet, puff, 67.
- Poultry, 153-157. *See also* Chicken.  
     boning, 154.  
     cleaning and dressing, 153-154.  
     general discussion, 153.  
     recipes, 154-157.  
     trussing, 154.
- Preserves, 22-46.  
     definition, 33.  
     experiments, 26-33.  
     fruits, suitable for, 22.  
     general directions for, 34.  
     recipes, 39-42.  
     references, 45-46.  
     score card, 45.  
     utensils necessary for, 33.
- Preserving, 22-46. *See also* Canning.
- Protein. *See* Experiments, Food Values,  
     and the general discussions of the  
     different foods.
- Prunes, stewed, 296.
- Puddings, 53-55, 65, 91-92, 244, 266-  
     267, 279-280, 311-314.  
     apple tapioca, 53, 313.  
     baked Indian, 54.  
     bread, 91.  
     chocolate bread, 92, 313.  
     chocolate custard, 312.  
     coffee cream, 311.  
     coffee sago, 54.  
     corn, 65, 299.  
     cornstarch, 53.  
     cup custard, 312.  
     date, 266.  
     fig, 267.  
     frozen, 279.  
     fruit, 267.  
     graham, 244.  
     hard sauce, 313.  
     Hunter's, 267.  
     junket, 313.  
     junket, chocolate, 313.  
     meringue, 313.  
     Nesselrode, 279.  
     Nesselrode, sauce for, 280.  
     orange, 55.  
     plum, 244, 267.  
     queen of, 92.  
     rice, 91, 312.  
     shredded wheat, 55.

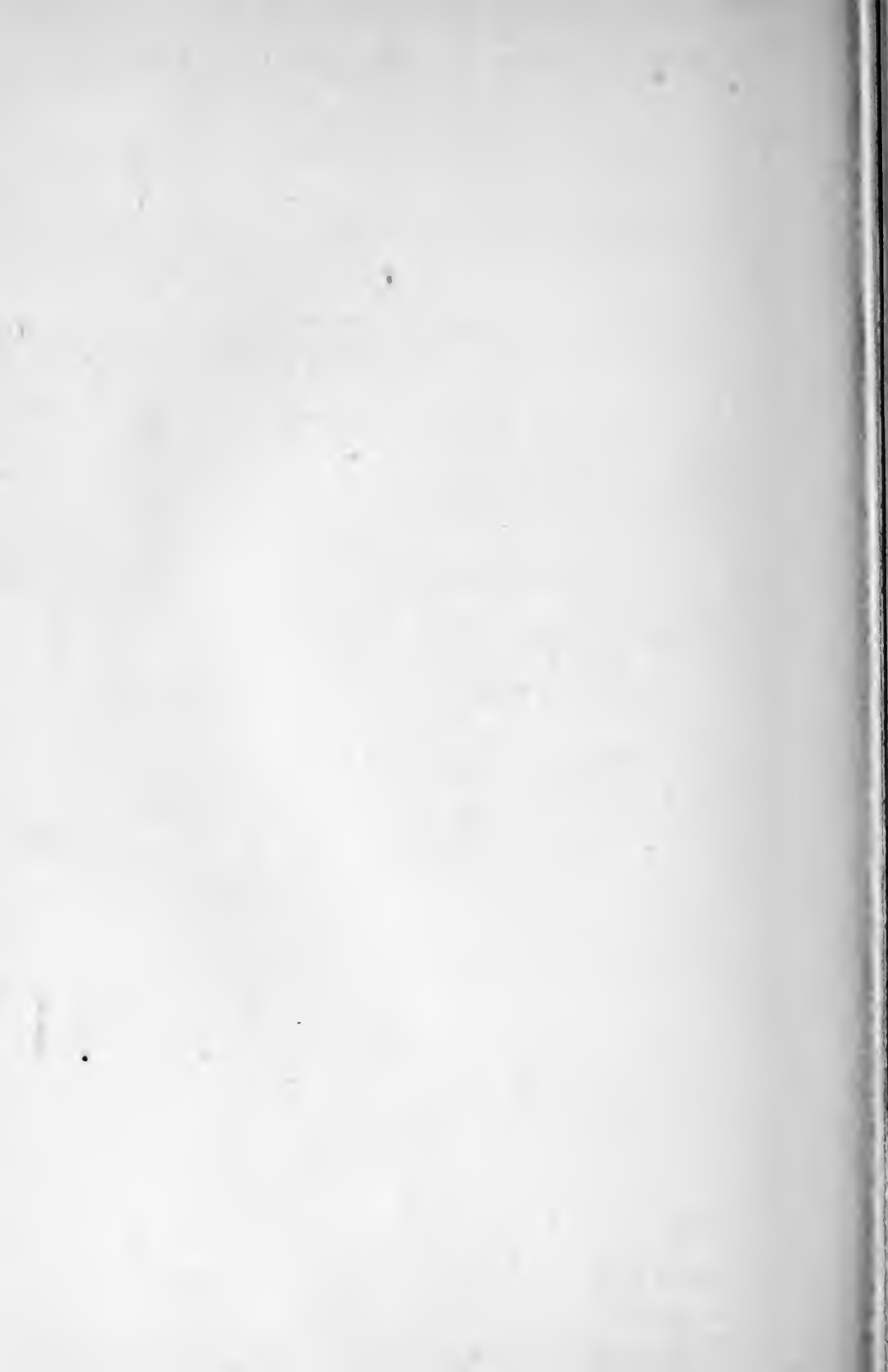
- Puddings, snow, 150, 311.  
     snow balls, 267.  
     soft chocolate custard, 312.  
     soft custard, 312.  
     steamed, 314.  
     steamed Indian, 266.  
     tapioca, 91.  
 Pudding sauces, 268-269, 274, 280.  
     classification, 268.  
     chocolate, 274.  
     cream, 269.  
     hard, 268.  
     lemon, 268.  
     Nesselrode pudding, 280.  
     Sabayon, 269.  
     sterling, 268.  
     vanilla, 269.  
 Punch, fruit, 296.  
 Purées, 76-77.  
     black bean, 77.  
     corn, 75, 76.  
     pea, 76.  
     potato, 76.  
 Quinces, baked, 17.  
 Rarebit, Welsh, 98, 99.  
 Raspberry vinegar, 38.  
 References, 10, 20-21, 45-46, 56-57, 80-81, 93-94, 105-106, 122, 151-152, 171, 187-188, 264-265, 283, 294.  
     beverages, 10.  
     butter, 94.  
     canning and preserving, 45-46.  
     cereals, 56-57.  
     cheese, 105-106.  
     eggs, 122.  
     fish and shellfish, 171.  
     flour and bread, 187-188.  
     fruits, 20-21.  
     ice cream, 283.  
     meat, 151-152.  
     milk, 93-94.  
     oils, 264-265.  
     soups, 81.  
     sugar, 294.  
     vegetables, 80.  
 Rhubarb, baked, 296.  
 Rice, 47-52, 55, 91-92, 105, 143, 297.  
     experiments, 49.  
     creamed, 305.  
 Rice, in sirup with apples, 52.  
     methods of preparation, 51, 52, 91, 92, 143, 297, 302, 304, 305.  
     with cheese and tomatoes, 105.  
 Roasting, 135.  
 Rolls, 192-195, 307.  
     Dorcas, 192.  
     glaze for, 195.  
     hot cross buns, 194.  
     luncheon, 194.  
     Parker House, 192.  
     Swedish, 193.  
 Royal scallop, 144.  
 Salads, 248-255, 261-263, 310-311.  
     accessories served with, 251.  
     combinations, 252, 253, 254.  
     dressings, 249, 261-263.  
     food value, 259.  
     foundation, 248-249.  
     general discussion, 248.  
     greens, 248, 251.  
     variations in dressing, 249-250.  
     when served, 250-251.  
 Salad dressings, 261-263.  
     boiled, 262.  
     cream, 262.  
     French, 261, 262.  
     mayonnaise, 263.  
     Spanish, 262.  
 Salmon. *See* Fish.  
 Sandwiches, 255-259.  
     conveyor of filling, 255-256.  
     fancy, 258.  
     fillings, 256-257.  
     food value, 259.  
     general rules, 255.  
 Sauce, 144-146, 163-164, 268-269, 274, 280, 304.  
     Béchamel, 163.  
     brown, 144.  
     brown mushroom, 145.  
     chocolate, 274.  
     classification, 268.  
     cream, 269.  
     Cuban, 145.  
     drawn butter, 163.  
     egg, 163.  
     hard, 268.  
     Hollandaise, 164.  
     horseradish, 146.

- Sauce, lemon, 268.  
 Maitre d'Hôtel butter, 164.  
 mock Hollandaise, 164  
 mushroom, 145.  
 Nesselrode, 280.  
 tartare, 164.  
 tomato, for rice or macaroni, 304.  
 Sabayon, 269.  
 Spanish, 146.  
 sterling, 268.  
 vanilla, 269.
- Scalloped dishes, 73-74, 144, 303.  
 apples, 74.  
 crumbs for, 73.  
 general rules, 73.  
 meat, 303.  
 oysters, 306.  
 royal, 144.  
 tomatoes, 74.  
 vegetables, 73.
- Score cards, 45, 121, 146, 151, 195-197, 205, 216, 227-228, 241-242, 282.  
 biscuits, 196, 197.  
 bread, 195.  
 canned fruits, 45.  
 cookies, 216.  
 croquettes, 121.  
 custard ice cream, 282.  
 gelatin desserts, 151.  
 layer cake, 228.  
 loaf cake, 227.  
 meat roast, 146.  
 muffins, 205.  
 Philadelphia ice cream, 282.  
 pies, 241, 242.  
 preserves, 45.  
 sherbets and ices, 282.  
 sponge cake, 228.
- Shad roe, 161.
- Shellfish, 165-171.
- Sherbets, 276-277.  
 combination, 277.  
 milk, 276.  
 orange, 277.  
 pineapple, 277.
- Smelts, 161.
- Soda (sodium bicarbonate), 86, 180, 181.
- Soufflés, 67, 69, 100, 113-115.  
 cheese, 115.  
 cheese, corn and, 115.
- Soufflés, cheese, with pastry, 100.  
 custard, 114.  
 essentials for, 113.  
 fruit, 114.  
 lamb, 144.  
 lemon, 114.  
 meat, 115.  
 potato, 67.  
 squash, 69.  
 varieties, 114.  
 vegetable, 115.
- Soups, 100-101, 132-134. (*See also*  
 Cream, and Purées.)  
 brown stock, 133, 300.  
 chicken, 133.  
 cream of celery, 75, 300.  
 cream of corn, 300.  
 cream of potato, 300.  
 cream of tomato, 75, 300.  
 Creole, 134, 301.  
 general discussion, 132.  
 macaroni, 302.  
 meat left from, 132-133.  
 milk and cheese, 100.  
 Mongole, 134, 301.  
 noodle, 302.  
 rice, 302.  
 stock classification, 132.  
 to clear stock, 133.  
 uses for stock, 132.  
 vegetable, 134, 301.  
 vegetable and cheese, 101.
- Spaghetti, 207, 209.  
 boiled, 207.  
 loaf, 209.
- Spanish cream, 150.  
 macaroon, 150.  
 plain, 150.
- Spinach. *See* Vegetables.
- Sponges, gelatin, 149.  
 chocolate, 149.  
 pineapple, 149.
- Squash, 69-70.  
 baked summer, 70.  
 soufflé, 69.  
 winter, 69.
- Starch. *See* Experiments.
- Steak, stuffed flank, 144.
- Stuffing,  
 for chicken, 155.  
 for fish, 160.

- Stuffing, for flank steak, 136.  
Sugar, 34, 285-290.  
    canning with, 34.  
    canning without, 34.  
    experiments, 285-286.  
    fondant, 286-287.  
    uses, 287-290.  
Sweetbreads, 139, 140.  
    broiled, 139.  
    creamed, 140.  
Sweet potatoes, 67, 68, 299.  
  
Tannin, 3.  
Tartrate, potassium acid, 2.  
Tea, 1-4, 6-7, 295.  
    experiments, 3-4.  
    recipes, 6-7, 295.  
Temperatures. *See* Experiments, and  
    Oven Temperature.  
Theine, 2.  
Theobromine, 2.  
Timbale cases, 199-200.  
Tomatoes, 37, 38, 44, 74, 299.  
    canned, 37.  
    marmalade, 39.  
    pickled, 44.  
    scaloped, 74.  
    stewed, 299.  
  
Veal. *See* Meat.  
Veal en Casserole, 143.  
Veal loaf, 303.  
Vegetables, 22, 24, 58-73, 101, 159, 298,  
    299.  
    classification, 58-59.  
    creamed, 73.  
    en Casserole, 70.  
    experiments, 60-64.  
    general discussion, 58.  
    general rules for cooking, 60.  
    methods of preservation, 22.  
    points to emphasize, 59.  
    reasons for cooking, 59.  
    scaloped, 73.  
    suitable for canning, 24.  
    suitable for pickling, 24.  
    suitable with fish, 159.  
    ways of serving, 60.  
Volatile oils, 3.  
  
Waffles, 198-199.  
    corn meal, 199.  
    general rules, 199.  
    sour milk, 198.  
    sweet milk, 198.  
    wheat, 198.  
Welsh rarebit, 98, 99.  
Whey, lemon, 8.  
  
Xanthoproteic reaction for proteins, 85.  
  
Yeasts, 26.



**T**HE following pages contain advertisements of a few of the Macmillan books on kindred subjects





# A Laboratory Hand-book for Dietetics

By MARY SWARTZ ROSE, Ph.D.

Assistant Professor, Department of Nutrition, Teachers College, Columbia University

*Cloth, 8vo, \$1.10*

Investigations into the quantitative requirements of the human body have progressed so far as to make dietetics to a certain extent an exact science, and to emphasize the importance of a quantitative study of food materials. This little book explains the problems involved in the calculation of food values and food requirements, and the construction of diets, and furnishes reference tables which will minimize the labor involved in such work without limiting dietary study to a few food materials.

Only brief statements of the conditions affecting food requirements have been made, the reader being referred to general textbooks on the subject of nutrition for fuller information, but such data have been included as seem most useful in determining the amount of food for any normal individual under varying conditions of age and activity.

## TABLE OF CONTENTS

### PART I

#### Food Values and Food Requirements.

##### THE COMPOSITION OF FOOD MATERIALS.

##### THE FUNCTIONS OF FOOD.

Food as a Source of Energy.

Food as Building Material.

Food in the Regulation of Body Processes.

##### FOOD REQUIREMENT.

The Energy Requirement of Normal Adults.

The Energy Requirement of Children.

The Energy Requirement of the Aged.

The Protein Requirement.

The Fat and Carbohydrate Requirement.

The Ash Requirement.

### PART II

#### Problems in Dietary Calculations.

Studies in Weight, Measure, and Cost of Some Common Food Materials.

Relation between Percentage Composition and Weight.

Calculation of the Fuel Value of a Single Food Material.

Calculation of the Weight of a Standard or 100-Calorie Portion.

Food Value of a Combination of Food Materials.

Distribution of Foodstuffs in a Standard Portion of a Single Food Material.

Calculation of a Standard Portion of a Combination of Food Materials.

Analysis of a Recipe.

Modification of Cow's Milk to a Required Formula.

Calculation of the Percentage Composition of a Food Mixture.

The Calculation of a Complete Dietary.

Scoring of the Dietary.

#### Reference Tables.

Refuse in Food Materials.

Conversion Tables — Grams to Ounces.

Conversion Tables — Ounces to Grams.

Conversion Tables — Pounds to Grams.

Food Values in Terms of Standard Units of Weight.

Ash Constituents in Percentages of the Edible Portion.

Ash Constituents in Standard or 100-Calorie Portions.

### APPENDIX

The Equipment of a Dietetics Laboratory.

---

THE MACMILLAN COMPANY

Publishers

64-66 Fifth Avenue

New York

# Food Products

By HENRY C. SHERMAN

Professor of Food Chemistry in Columbia University

*Illustrated, cloth, 12mo, 594 pages, \$2.25*

A comprehensive, descriptive text-book on the general subject of foods. The first and second chapters deal with the principal constituents and functions of food and with food legislation; then follow chapters on: Milk; Cheese and Other Milk Products; Eggs, Meats and Meat Products; Poultry, Fish and Shellfish; Grain Products; Vegetables, Fruits and Nuts; Edible Fats and Oils; Sugar, Molasses, Sirups and Confectionery; and Food Adjuncts. The plan of the book makes it easy for the teacher to follow a different order of topics if desired.

---

“Admirable.” — *Science*.

“A really excellent text-book.”

— *Educational Review*.

“A valuable contribution to the literature of foods as well as a scientific presentation of many new facts regarding food values.” — *Insurance*.

“A scientific study of great value.”

— *New York Times*.

---

THE MACMILLAN COMPANY

Publishers

64-66 Fifth Avenue

New York

BY HENRY C. SHERMAN, PH.D.

Professor in Columbia University

# Chemistry of Food and Nutrition

*Cloth, 12mo, viii + 355 pages, \$1.50*

The purpose of this volume is to present the principles of the chemistry of food and nutrition with special reference to the food requirements of man and the considerations which should underlie our judgment of the nutritive values of food. The food is here considered chiefly in its nutritive relations. It is hoped that the more detailed description of individual foods and the chemical and legal control of the food industry may be treated in a companion volume later.

The present work is the outgrowth of several years' experience in teaching the subject to collegiate and technical students who have represented a considerable diversity of previous training and points of view, and, while published primarily to meet the needs of the author's classes, it is hoped that it may also be of service to students and teachers elsewhere and to general readers whose main interest may lie in other fields, but who appreciate the importance of food and nutrition as factors in hygiene and preventive medicine.

While neither the size nor the purpose of this book would permit an historical or technically critical treatment, a limited number of historical investigations and controverted views have been mentioned in order to give an idea of the nature and validity of the evidence on which our present beliefs are based, and in some cases to put the reader on his guard against theories which, while now outgrown, are still sometimes encountered.

---

PUBLISHED BY

THE MACMILLAN COMPANY

64-66 Fifth Avenue, New York

# Household Bacteriology

BY

ESTELLE D. BUCHANAN, M.S.

Recently Assistant Professor of Botany, Iowa State College

AND

ROBERT EARLE BUCHANAN, PH.D.

Professor of Bacteriology, Iowa State College, and Bacteriologist of the  
Iowa Agricultural Experiment Station

*Cloth, 8vo, xv+536 pp., index, \$2.25*

The word Household is used as an extension rather than a limitation of the title. In a thoroughly scientific manner the authors treat the subject-matter of general as well as of household bacteriology and include, therefore, the true bacteria as well as the yeasts, molds, and protozoa. The volume is, therefore, a general textbook of micro-biology in which special attention is given to those problems which are of particular interest to the student of household science. The main divisions of the book treat (1) the micro-organisms themselves, (2) fermentations with special reference to those affecting foods, (3) the relations of bacteria and other micro-organisms to health. A fully illustrated key (comprising 37 pages) to the families and genera of common molds supplements the unusually extended discussion of the morphology and classification of yeasts and molds, and makes possible the satisfactory identification of all forms ordinarily encountered by the student. The work embodies the results of the most recent researches. The book is exceptionally well written, the different topics are treated consistently and with a good sense of proportion. While concise in statement, it is thorough in method and scope. It is, therefore, well adapted for use as a text not only *for students of household science*, but *also* for those to whom it is desired to present the science of bacteriology from an *economic and sanitary rather than from a strictly medical point of view*.

"The book is a concisely written work on micro-biology, a branch of economic science that the public is beginning gradually to understand, has important relationship to the total welfare and prosperity of the community. . . . The manual can be recommended as a very good elementary bacteriology. It comprises about all there is of practical domestic value."

— *Boston Advertiser*.

---

THE MACMILLAN COMPANY

Publishers

64-66 Fifth Avenue

New York

# Textiles

## A Handbook for the Student and the Consumer

BY

MARY SCHENCK WOOLMAN, B.S.

President of the Women's Educational and Industrial Union, Boston, acting head  
of the Department of Household Economics, Simmons College, recently  
Professor of Domestic Art in Teachers College

AND

ELLEN BEERS MCGOWAN, B.S.

Instructor in Household Arts in Teachers College, Columbia University

*Illustrated, Cloth, 12mo, xi + 428 pp., Index, Bibliography, \$2.00*

This book is the result of twenty years' experience in teaching textiles to college students. It is intended as a textbook for college classes or for study clubs and as a guide for the housekeeper or individual consumer of textiles and clothing, the teacher, the club woman, the saleswoman, and as an introductory survey of the subject for the student who contemplates professional work in the textile industries.

The growing emphasis upon textile study in college departments of home economics or household arts, and the increasing use of the textile industry as teaching material in other departments and other grades of schools, shows a recognition of the part that the textiles are playing in the development of civilization and in our everyday life. Interest in the subject is still further accentuated by the movements now on foot to regulate the social-economic conditions in the textile and clothing industries and to secure standardization and honest labeling of textile products, as is being done for food products by the "pure food laws."

To meet the existing need the authors have attempted to prepare a text suitable for use in college classes or by the public, shorter and more readable than the technical handbooks, yet sufficiently thorough and comprehensive to give a sound grasp of the subject as a whole with so much of the technology as is directly helpful to the consumer and as should be included in general courses in colleges and technical or vocational schools.

---

THE MACMILLAN COMPANY

Publishers

64-66 Fifth Avenue

New York

# Physics of the Household

By C. J. LYNDE

Professor of Physics in Macdonald College, Canada

*Illustrated, 12mo, \$1.25*

This book presents in an exceptionally clear and direct manner the subject matter of a concise yet sufficiently comprehensive course for those beginning the study of physics whether in the college, the technical institute, or the secondary school. The principles are made clear by application to household affairs and other every-day experiences. Although adapted to the requirements of beginners, those who have previously studied physics will also welcome the concise review of principles and the many applications and illustrations. In addition to its merits as a textbook, it constitutes a most interesting and useful manual on household appliances and processes. Any one who is interested either in knowing just how the familiar appliances work, or in equipping a house according to the most modern methods, will find in Professor Lynde's book a wealth of stimulating and highly practical information.

# Elementary Household Chemistry

By J. F. SNELL

Professor of Chemistry in Macdonald College, Canada

*Illustrated, 12mo, \$1.25*

In this textbook are to be found many new features both in the selection and in the presentation of its subject matter. The principles of chemistry are developed and their every-day applications are studied simultaneously. The book is the outgrowth of a course given by the author for the last six years to students of high school and college age, but of varying degrees of preliminary training. The course has, therefore, been simple and the aim has been to introduce only such principles as find immediate application in connection with household work, but to present these principles in a correct and truly scientific manner.

---

THE MACMILLAN COMPANY

Publishers

64-66 Fifth Avenue

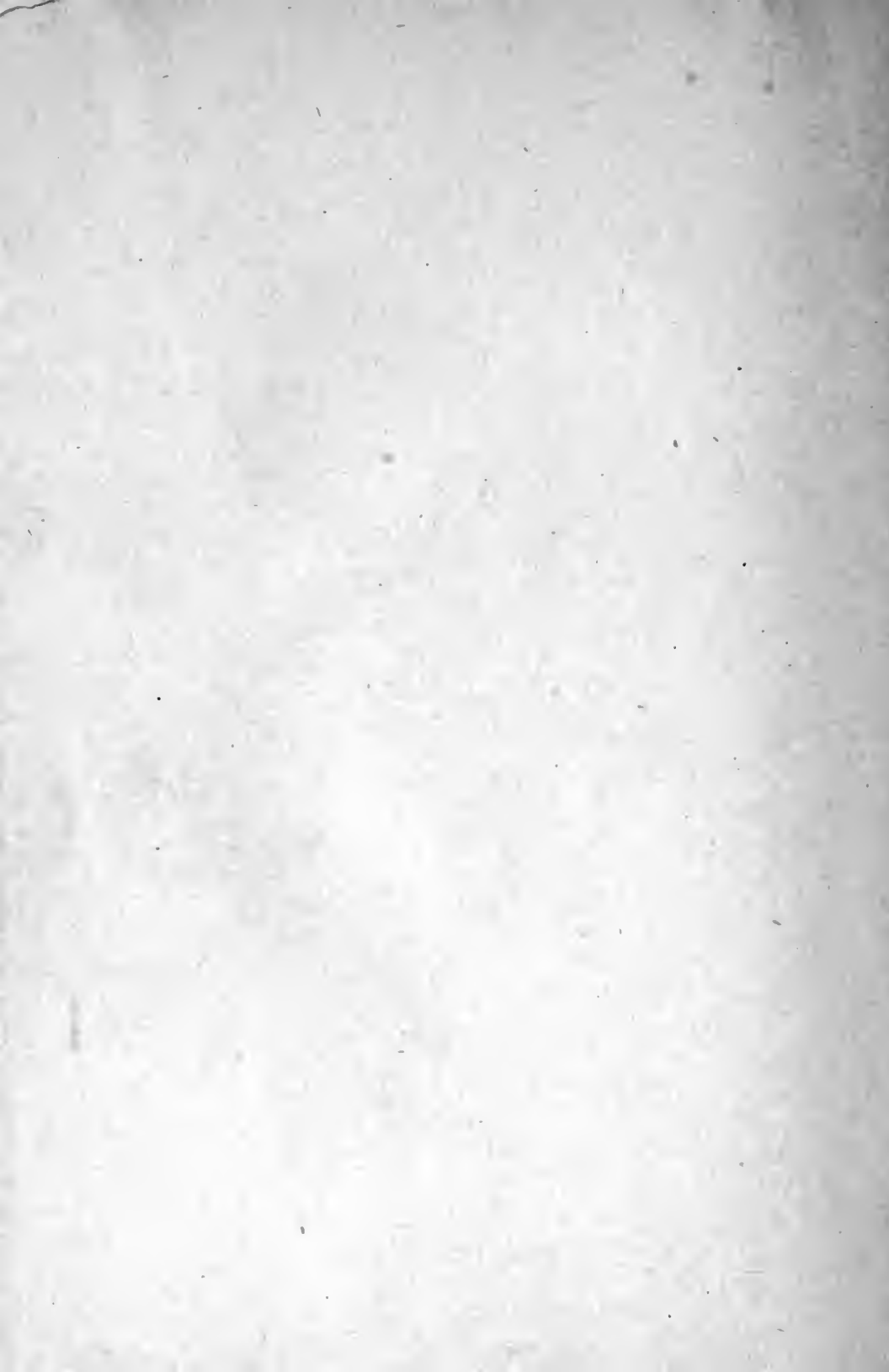
New York





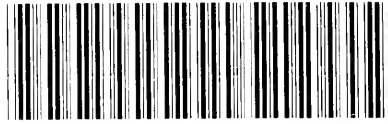








LIBRARY OF CONGRESS



0 014 485 763 A ●